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MACFADDEN'S ENCYCLOPEDIA OF PHYSICAL CULTURE

VOLUME V

This Volume is devoted to Sex Hygiene,
Parenthood and Child Training

Complete Index of Contents appears at close of Volume

MACFADDEN'S ENCYCLOPEDIA OF PHYSICAL CULTURE

A WORK OF REFERENCE, PROVIDING COMPLETE INSTRUCTIONS FOR THE CURE OF ALL DISEASES THROUGH PHYSCULTOPATHY, WITH GENERAL INFORMATION ON NATURAL METHODS OF HEALTH-BUILDING AND A DESCRIPTION OF THE ANATOMY AND PHYSIOLOGY OF THE HUMAN BODY

By BERNARR MACFADDEN

ASSISTED BY

Specialists in the Application of Natural Methods of Healing

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CHAPTER I.

REPRODUCTION AND HUMAN IMPROVEMENT.

THE manner of the reproduction of life and the physical organism which constitutes the channel through which it is accomplished, are matters of such vital importance that every living man and woman should be thoroughly educated in regard to them. It must be obvious even to the most casual observer that ignorance of these functions is likely to result in mistakes and abuses of various kinds. The bitter facts of human life are that such ignorance actually is responsible for abuses and perversions that are almost universal in their practice and that have given rise to an extent of suffering and racial deterioration that is beyond all computation. Wherever one may go in the civilized world, he finds the results of these evils staring him in the face. It is desired in this volume to present some of the most important and vital known truths in regard to these matters.

There are two main aspects of the generative function to be considered, the first of these being concerned with reproduction proper, with special emphasis upon the bearing of normal, sound and vigorous children, and the second having to do with the personal relations between the sexes in marriage, sexual emotion, the physiological laws governing these matters and general considerations along these lines. The latter aspects of the subject will for the most part be taken up in the succeeding chapter, whereas for the present we shall concern ourselves mainly with those matters that bear directly upon the production of superior children, which, consciously or unconsciously, should be the purpose of every normal marriage. I shall later have something further to say upon the desirability of children in relation to harmony and happiness in marriage.

One of the most important and vital of all factors in human improvement is the selection of mates who will produce superior children. Strange as it may seem, even those who have given much attention to the breeding of various plants or animals seem to have overlooked the fact that it is possible to use intelligence in the selection of human mates.

In choosing for marriage, the young man should always bear in mind the thought, not merely whether or not they are sufficiently fond of each other and will get along together, but, "Will she make a good mother to my children?" Similarly, the first and continuous thought of the young woman should be, "Is he fit to be the father of my children?" The great error of the past has been that this aspect of the matter has been avoided, and prurient prudery is to blame. The question of parent, even the possibility of parenthood, has been completely ignored, and among the majority of people today is still so ignored. With an incomparable hypocrisy, they approach the marriage just as though it were a mere matter of living together under the same roof and nothing more, shrinking to face any topic which their prudish and polluted state of mind has caused to seem indecent to them, and unmentionable. But this question of parenthood is the all important question in every case, and it is incumbent upon us to consider it first of all.

It would hardly seem necessary to say that nothing is so essential for satisfactory parenthood as vitality and vigorous health. It is for this reason that the great physical culture movement in which we are engaged is of first importance not merely for the individual welfare, but for race improvement. The weak, sickly, anemic and nervously deranged cannot expect to make good parents, no matter what excellent mental qualities they may possess, for their children will probably be more or less handicapped by weakness. But the happy fact remains that these very weaklings, by the persistent practice of the various measures presented in detail in the pages of this work, may build up health and strength, realizing in time a normal degree of vigorous manhood and womanly power. We can show them the way, and it only rests with them to persist in this endeavor. For instance, while we would ordinarily advise against marrying one who possesses a muddy, yellow complexion, we would point out with emphasis that such a person, probably having been born with a normal constitution, will in nearly every case be able to eradicate the yellow tinge from his skin and supplant it with the ruddy glow of health.

Accordingly, when there is no deep-seated disorder or radical defect, the apparent physical disability on the ground of ill-health or weakness need not deprive one from the hope of some day being worthy of the privilege of parenthood. In saying this, however, we must not forget that there are some forms of disease and some conditions the results of which are not so easily eradicated. We shall discuss this shortly. And every right minded person will see that he owes it not only to himself but to his intended mate and possible progeny to perfect his health before he contracts marriage. In a general way we may insist upon the choice of one who is thoroughly healthy and apparently sexually normal, as one of the first rules of marital selection.

Type of well-sexed womanhood.

The indications of a well-sexed condition are those of any normal, vigorous and healthy individual. There are no special, mysterious and peculiar signs, as some would suppose. True womanhood is generally denoted by a well-knit, beautifully formed figure, a full-sized waist, an obviously strong back with an erect carriage, a full throat, a well-rounded and firm, though medium-sized bust, the characteristic feminine outlines of broad hips and pelvis, not set too low, a light, elastic step, warm hands, a good complexion and a clear, melodious voice.

And on the side of the man, we may say generally that virility is evidenced by a strong and robust frame, a normal muscular development, a strong neck and back, a high chest, broad, square shoulders, an erect, manly carriage, a clean, strong physiognomy, warm hands, a direct, steady gaze and a clear, full voice. We might say that the general build or plan of the perfect masculine body is something akin to an inverted pyramid, or as we might say, to the letter V, the apex represented by the feet, the hips narrow and the greatest width at the shoulders. Among women, however, the general rule is a figure conforming more

A sunken chest and depressed neck and shoulders frequently mark those who are poorly sexed.

nearly to a diamond-shaped outline or double pyramid, the feet and head representing the upper and lower apices, and the broadest portion represented by the width of the hips.

We should really not attempt to lay down any set rules in this matter, for there are material variations of build among different people, all of whom might be physically sound and capable of reproducing a splendid type of children. This subject of perfect build and proportions is discussed in Vol. II, p. 832.

As a matter of fact, the instincts, and personal preferences of individuals are to be followed in marital selection, limited of course by the special considerations of fitness or unfitness which we shall speak of shortly. It is generally suggested that those of opposite temperament are best fitted for mating with each other, each supplying qualities in which the other may be lacking. It is usually found that there is an instinctive attraction between those of opposite temperaments, blondes being attracted to brunettes, tall people to short, phlegmatic types to those which are more nervous and high strung, or the so-called mental temperaments, and so on. This general rule of the natural selection of opposites has doubtless had much to do with maintaining an average of the race, which might otherwise run to extremes in various directions. However, as I have said, one should not try to set any special rules for himself in respect to these matters, but to follow his own instincts where they do not conflict with good judgment.

Under the present idiotic and ostrich-like attitude of the world-at-large toward the marriage problem, unhappy and unsuccessful marriages should be no cause for wonderment. In truth it is the happy marriages that are in most cases merely accidents. Strong words, but when one considers the unseeing and unknowing conduct of men and women before marriage, not strange words. Marriage is really the consummation of the highest ideals, powers and faculties of men and women. But to have man contract matrimony in the belief that he will secure greater liberty and license to pander to unnatural tastes

—aroused and stimulated by false conceptions—or for woman to have thrust upon her the dictum that she is subject to man in such matters, is to make of marriage a veritable burial-vault for love.

Doubtless more is being written on this vitally important subject of marriage to-day than ever before in the world's history. And to what end? may be asked. Eventually we shall see. Certain it is that never has the world stood more in need of education and reform on this topic than just now. Well it is that the necessity for enlightenment and reform in this direction is being recognized. Humanity is at a stage where it is impossible to say too much on this all-important subject.

Marriage is the most important voluntary step in life. The three events of absolutely overshadowing importance in our mundane existence are our birth—with which we ourselves have naught to do; our deaths—for which we personally are rarely directly responsible; and marriage—in which normally, we are governed by our own volition.

Sad indeed it is to consider the untold hosts of men and women who throughout the term of their earthly existence never attain the fullness of their normal mental and physical powers. What pitiable specimens of humanity are those who merely reach half way—or even less—toward the mastery of their projects or resolutions. Such men are virtually possessed of but half their powers—they are as severely disabled and incapacitated as though part of their physical and mental equipment were so manacled as to preclude its utilization.

GENIUS.—Genius is not usually a desirable quality, inasmuch as it commonly goes with an organization that is below the normal in other respects. I am not referring to that "capacity for hard work," which is often mistakenly called genius, but to the peculiar and abnormal capacity for extreme mental activity in a certain direction. Many authorities regard the genius as one who is next door to insanity or epilepsy. It may be, however, that with the improvement in the human species, we shall some day have men and women with talents equal to those of the genius of the present day who are at the same time well-balanced and sound. Such apparently is the dream of those who talk about "the superman."

But so far as we are concerned, normal and well-rounded individuals, healthy and vigorous in both body and mind, are much more desirable than geniuses, or freaks in any direction. It is for this reason that those of opposite temperaments are best suited to become parents, the offspring securing different qualities from both sides and becoming, therefore, more complete and well-balanced. In the struggle for survival, the sound, strong, versatile and all-around man will be found superior to his one-sided competitor. We desire ability, competence, but not abnormality. And, in the end, the level-headed, well-poised, all-around man, specializing and concentrating, will probably accomplish as much as the erratic genius who can do only one thing.

Cousins.—It is true that cousins have sometimes married with satisfactory results in the way of children, but the rule is otherwise. Even in some of those cases where the children seem to be all that is desired, it is possible that if the families had been larger, among the greater number of children there would be some not as sound and normal as one could wish. Speaking generally, it is always unwise for cousins to marry. Coming from the same lineage, or at least from some of the same strains, they will naturally have largely the same inherent qualities. Any weaknesses, either physical or mental, which they may possess in common will be so intensified in their offspring as to render them markedly defective or inferior. It is considered by some students that if both parties to a consanguineous marriage take unusually good care of themselves and acquire exceptional vigor, they would then avoid the chances of having inferior children. This, however, cannot be substantiated, and we can no longer hold out such hopes. It is very doubtful whether any means whatever would alter the organization of the child who at birth represents an unfavorable combination of temperaments.

In the marriage of cousins there is not only the risk but the very strong probability of inferior offspring. Certainly, therefore, no one exercising good judgment can afford to take any chances by marrying a blood relative, even a distant one.

EUGENICS.—This matter of wise selection for marriage, which at the bottom is presumably selection for parenthood, has a far wider significance than the individual question of what kind of children will be reared in one's own particular family. Its most important aspect is really that which has to do with the improvement of the standard of the entire human race. *Eugenics* is the name of the modern study or science which is concerned with racial improvement through the better breeding of human beings, this to be accomplished partly by encouraging the marriage of those who are normal and sound in every way, but especially by discouraging and preventing the reproduction of those who are unfit for parenthood. The field is a large one, and a considerable number of earnest and scientific investigators are now at work studying and disseminating the important truths along these lines which the world must eventually learn. The consistent physical culturist, in the broad sense of the term as it applies to racial improvement, will therefore naturally concern himself with putting into practice the fundamental principles of this new science.

Eugenist enthusiasts believe that their movement is the most important ever undertaken; that it will be largely instrumental in saving modern races from the national decay which has swept into oblivion the civilizations of antiquity; that the subject of heredity, in this connection, is one of the most important and vital of all human studies; and that if we can get the right people born into this world, while the wrong people are not born, producing a race of normal, sound, healthy and vigorous individuals, then all of our social evils, our economic and industrial difficulties, will be very easily overcome. It is a big and splendid program, and there is no doubt that the large and growing host of physical culturists throughout the world will do more than any other force toward bringing about this great result.

THE PROCESS OF REPRODUCTION.—The method of reproduction differs somewhat in the lower and higher forms of life, though persisting through all of them is the common principle that each new generation springs from a cell of the parent body. The very lowest forms of life consist of a single cell, and in this the process of multiplication consists merely of the spontaneous division of this cell into two cells, these again subdividing in the same way indefinitely. This method is called *fission.* Such multiplication, without sex, is also called *asexual* or *non-sexual* reproduction. Ascending the scale of life from the unicellular structure to others that consist of an organized group of cells, we find a very similar method of asexual reproduction known as *gemmation,* which consists of "budding," or in other words of the formation of buds or gemmae upon the wall of the parent body, these buds becoming detached and thereafter maintaining a separate existence, reproducing in turn by the same method. Certain flowerless plants multiply in this way, as well as some of the lower animals. Not only can a starfish repair the loss of a tentacle, but from the severed part a complete new animal can be developed. A newt can reproduce from an amputated toe, and every tissue, muscle, bone, nerve and skin will be in place.

In the higher forms of life, however, both plant and animal, reproduction is sexual, or in other words, accomplished by the union of cells from the two separate sexes. The familiar study of botany has taught many school children the method of reproduction in plants, showing how the tiny seed in the ovary of the flower requires fertilization by the pollen from the stamen of another plant (or from its own stamen in some self-fertilizing varieties) before it forms a complete seed from which another plant will grow. The essential principle is practically the same in animal life, though with some variations in the manner and circumstances of the development of the embryonic cell. The lower in the scale of life, the greater the power of reproduction, numerically considered, apparently allowing for the probable waste and destruction of life that we have already alluded to, while the more complex and perfect the organism, the more limited the capacity for offspring, and the greater the dependence of the young and the parental care required for its protection and sustenance. This matter was touched upon somewhat in Volume I, pp. 11-13.

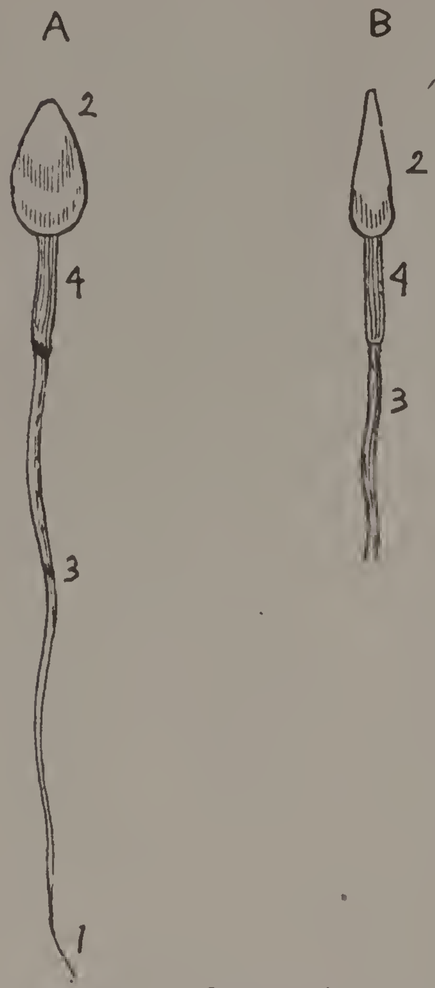
The specific act of generation in human life and among all of the higher animal forms involves a union of the two peculiar parental cells or germ-cells, the "germ-cell" or ovum of the female and the "sperm-cell" of the male. The germ-cell, upon being fertilized by the sperm-cell, or spermatozoön, which has the power of independent and continuous self-movement, is embedded in a mass of yolk, this supplying early nutrition to the embryo. In the case of the fishes, the eggs of the female are deposited in vast numbers in warm shallow water, where they are hatched out by the rays of the sun, after having been fertilized by the fecundating fluid given off by the male as he swims over them. Among the birds, a far higher order, a comparatively large egg is produced containing within its wall sufficient nutrition and even air to supply the needs of the embryo until its organization is well enough completed to enable it to break its way out into the world. In the case of the highest class of vertebrates, the mammalia, in which classification man is placed, the embryo, instead of being nourished by a quantity of nourishment stored up in a well-walled egg, secures its sustenance directly from the system of the mother, comes to life and continues the process of its development for some time before it leaves her body, and even then, for a certain time, continues to depend absolutely upon the tissue building materials from her milk glands. The name *mammalia* is given to this class of animals because of their breast-fed infancy.

The details of the development of a new human life, after its conception, and of its coming into the world, will be taken up in a later chapter. Similarly, the anatomy and physiology of the generative system, both of women and of men, together with the disorders from which they suffer and the most effective remedial methods, will be taken up in special chapters.

THE MECHANISM OF HEREDITY.—Each new generation, as we have said, springs from the germ-cells of the preceding generation. The germ-cell is not, however, as the primitive savage might suppose, a miniature of the completed individual, but merely contains the peculiar forces or potentialities which when developed and elaborated will take the form of a complete individual, reproducing the characteristics of the parents and of the parents' forefathers. These qualities in the germ-cell, which determine the character of the creature into which it will develop, may be called determiners. They naturally differ widely among different species of animals and to a certain extent also among individuals of the same species. It is these peculiar chemical and physical differences in the fertilized eggs of different animals which are responsible for the fact that one will develop into a race-horse, another into a heavy draught-horse, another into an elephant, another into a mouse, and yet another into a man; or which, among men, will make it possible for one to develop into a philosopher, another into a mechanic and another perhaps into little more than a loafer.

The tremendous importance of physical culture, as a factor in preserving and improving the race, is seen in the light of this fact, that clean blood, health and vigor are absolutely indispensable to continued reproduction. The germ-cells naturally depend upon the blood for nutrition, and may likewise be affected by poisons circulating in this life-preserving stream, facts the significance of which we shall later consider. However, aside from such influences, there is a measure of seeming independence of the germ-cells from many influences that affect the somatic cells, so that mutilations and other impressions upon the latter do not necessarily always affect the former, making possible sound and normal offspring from one who has been maimed. One does not inherit all of the characters or qualities of the parents, but only the determiners for their inborn characters. Important aspects of this fact we shall also take up later.

MALE AND FEMALE GERM-CELLS.—In accordance with the wonderful principle of the division of labor which characterizes the make-up and functions of all forms of life except the very



Human Spermatozoon greatly magnified. A, front view; B, side view; 1, terminal filament; 2, head; 3, tail; 4, middle section.

lowest, the male and female germ-cells assume a somewhat different form. For one thing, a certain amount of nutrition is required to provide for the first stages of the development of the embryo, and, in the second place, the power of movement is necessary in order to bring together the two parental elements. The female germ-cell, therefore, takes the form of the ovum, or egg, and as such is incapable of movement, while the male germ-cell, which we have called the "sperm-cell," takes the form of spermatozoön, is comparatively unimpeded with nutritive or other matter, and has a very active power of self-movement. But while the ovum is naturally larger than the spermatozoön, they are of equal power in the matter of hereditary transmissions, and, in both cases, the essential process of the ripening or "maturation" of the germ-cell is practically the same.

Maturation of the Germ-Cell.—For all the practical purposes with which we are here concerned, it is not necessary to go into all of the biological details of the development of a cell, though a very brief indication of the process will be interesting and helpful to the student.

The germ-cell consists of a protoplasmic meshwork, usually called the cytoplasm, in or near the center of which is the nucleus. (*Protoplasm* is a general name applied to the substance of living cells, forming the physical basis of life. As a concrete illustration of its nature, the reader can perhaps do no better than to think of the white of an egg.) In the nucleus, which is the important part of the cell, the center of its activity, there is a reticulum or network, called the chromatin. It is now believed that this chromatic material is the bearer of the hereditary forces or determiners. The fertilization of the ovum brings together in equal parts determiners from the father and the mother, but apparently to avoid doubling the number of these with each new generation there is a curious division of each germ-cell, and of the determiners contained in it, before this fertilization can take place. Indeed, the process of the ripening or maturation of the germ-cell seems to consist essentially in this division of its chromatic material, or of the chromatic bodies. And though the male and female germ-cells are of different size, as we have seen, yet they possess the same amount of chromatic material.

By this elimination of half of the chromatic bodies on each side, the union of the male and female parental cells will finally give the embryonic cell the normal number of chromosomes, as these bodies are sometimes called. There are really two divisions of the chromatic material, that is to say, one first division and then another subdivision, because each one of the chromosomes is double in form, containing components originally derived from both the maternal and paternal germ-plasm. These, therefore, are divided, so that each one is single in form. So that finally, each original germ-cell, upon maturation, has given rise to four ripe cells, with chromosomes or determiners of both paternal and maternal origin distributed, apparently by chance, among them. One ripe germ-cell, therefore, may carry a quite different combination of determiners from another ripe germ-cell of the same individual, and in the combination of these from both parents, may be produced children which, even though in the same family, may be very unlike each other.

HEREDITY.—In the light of the above facts we are able to understand many things about heredity which otherwise would be very puzzling, or which might lead us to doubt the constant play in human lives of hereditary forces. The fact that a child may seem to lack some quality that the father has, or may possess in marked degree some quality which neither parent displays, was formerly a great source of confusion, inclined to make one sceptical or perhaps to lead him to suppose that various external influences played a more prominent part in the formation of each individual character than is actually the case. We now know, however, that heredity is one of the most persistent and unfailing of all forces in this universe. When we are surprised at the sudden display of some peculiar talent in an individual, the other members of whose family give no indication of it, we know that it is truly an inherited quality, and that somewhere in his lineage, perhaps in a grandmother on one side, or a great-grandfather on the other, the same talent or peculiarity existed. And we know why the son of a genius, although gifted in the same way as his father, may have only a part of the father's extreme aptitude in his special line of study. We see that in the division of the chromatic bodies in the germ-cell, the coming child may secure some qualities of the parent and not others, may inherit, through the side of one parent, either traits of both grandparents on that side, or many traits of the grandmother with few of the grandfather. All apparent discrepancies in heredity could be clearly explained by an understanding of the subject.

Unfortunately, there is still much to learn in regard to the exact laws governing the inheritance of family characteristics, but at the same time the average man, busy with the affairs of everyday life, really does not need to make an extensive and scientific study of the subject in order to appreciate the fact that the feeble-minded ought not to perpetuate themselves. If only the general public were as well informed on these matters as they are upon the geography of the earth, or the position of the latter in the solar system, and its manner of creating the seasons by yearly encircling the sun, the practical results would soon be apparent in the improvement of the race. I shall not enter into this subject deeply in this volume, but will place before the reader, briefly, the few fundamental principles which every man and woman, every boy and girl should know, even if they were compelled to neglect the study of geography and history in order to find these things out.

It scarcely seems necessary to take the time and space here to offer tables showing the percentages or proportionate numbers of children who will and who will not inherit certain characteristics when some of the ancestors are lacking in them, because it is sufficient for our present purpose to know that in such cases the children will vary, with the chances that the greater number of the children will have the characteristics. So that when there are undesirable qualities even in one grandparent, aunt, uncle or cousin, there is a chance that the offspring will have it, which should make the marriage undesirable on that account. And we may remember also that the offspring cannot avoid a characteristic or quality either when both parents possess it in full strength, or when both grandparents on one side possess it.

There are, indeed, several important special conditions or qualities which make for parental unfitness, which I shall consider separately, but as appertaining to the general subject of heredity in its relation to selection in marriage there is one principle that is very important to keep in mind, namely, the difference between superficial, acquired qualities which are not transmissible, and those which are inherent and transmissible. One can scarcely attempt to judge intelligently in selecting the father or mother of the children to be, without understanding this matter. Briefly, the fact is that one transmits those qualities with which he was born, those which are in the germ-plasm, but not the superficial characteristics and modifications which have come about through artificial conditions, culture, education, special training and environment generally.

From all that I have said, therefore, it may be seen that it is not wise to attempt to judge of fitness for marriage and parenthood by the mere surface qualities of an individual. One should ascertain as much as possible of his family. Are they all sound and normal? Or are some of them defective? Sometimes there are latent defects in the protoplasm which are not apparent in some members of the family, but which crop out in others for reasons that we have already referred to. Although a certain member of the family whom you desire to marry may seem to be normal, yet the fact that there is insanity among the brothers or sisters, or among aunts and uncles, should show the possibility of his passing down through the germ-plasm the peculiar deficiency or defect of organization which will result in a part of your children being defective in this way.

Hemophilia is a fair example of a hereditary weakness or defect which illustrates this point. The exact nature of the disorder is described in Vol. IV of this work, p. 2099. Sufferers from this condition are commonly called "bleeders" because of the characteristic symptom, but curiously enough it is confined almost entirely to men. The daughter of a man suffering from hemophilia may regard herself as perfectly sound, but she will pass the disorder down to her son. Genealogists have found that a single "bleeder" settling in the United States in the early days has been responsible for starting whole colonies of those so afflicted in several parts of the country.

Color-Blindness, likewise, is hereditary, and though it may usually be regarded as of comparatively little importance, yet it is a matter that would need consideration by an artist who desired to pass down his talents unimpaired by any combination with a defect of this character. Albinos, in addition to their mere lack of coloring pigment, are thought by some to be otherwise lacking in the chemical and physical constituents of a perfect organization.

The congenital deaf and dumb, when intermarried, will invariably bring forth children who are deaf and dumb. Such perpetuation is not desirable and should not be permitted. Nor should the normal individual mate with one afflicted in this way. But when the defects are the result of accident in one born normal, normal children may be expected.

Criminals who are criminal by nature and instinct should not be allowed to reproduce, for there is no question about the hereditary transmission of their peculiar form of degeneracy. And herein should be sounded a warning against the old-fashioned romantic notion of marrying a man to reform him, for when his condition is the result of a deep-seated and radical flaw in his nervous organization, the hopeful efforts of a well-meaning but too sentimental wife are predestined to failure. There are plenty of authoritative records to show the cost to human society of permitting even one or two of this type to marry. In the blind multiplication of their kind they have given rise to whole tribes of criminals, prostitutes, paupers and degenerates, not only working mischief and murder among their neighbors but entailing a tremendous expense to the community at large. A single pair of degenerates are said to have given rise to a family of some six hundred, of whom more than three-fourths have proven to be degenerate. Surgical sterilization of such is to be recommended, and is even now practiced and demanded by law in some localities.

Insanity and feeble-mindedness are unquestionably qualities of unfitness. It is true that there seem to be forms of temporary insanity or mental derangement, not the result of any inherent mental defect, to which this may not apply. Much care and discrimination should therefore be used. Where other members of the famliy have been known to suffer, one is pretty well assured that there is a tendency of this kind somewhere in the germ-plasm, or as people say, in the "blood." It is sometimes said that a man breaks down and goes insane under the pressure of overwork or the strain of excitement, but we should remember that other men of more perfect and well-balanced organization also overwork and even suffer a breakdown in health, without going insane, this unfortunate result probably occurring in the former case because there was some inherited weakness or deficiency which made it possible. And then, again, insanity is often the result of some disease, vice or poison which completely undermines the system, or sometimes the result of an injury. It is quite clear that where there is insanity in the family and the tendency is transmissible, marriage is undesirable. And surely, where it has supervened as a result of vicious habits and blood-poisoning disease, marriage is to be absolutely prohibited on account of the disease, though a healthy, normal brother would be unobjectionable.

Syphilis is now known to be one of the most common of all causes of insanity, investigations in some quarters having shown that a very large percentage of those brought under observation had suffered from this disease, sometimes twenty or thirty years earlier in life. The use of mercury and other strong drugs prescribed by many "regular" physicians for the treatment of syphilis results in a degeneration of the brain cells and permanent injury to the nerve centers which ultimately leads to locomotor-ataxia, insanity, and perhaps even to paresis. This disease and its rational treatment are fully discussed in Chapter VIII of this volume.

There are said to be some 300,000 feeble-minded persons in the United States, and as yet there has been little or no effort to check the process of their multiplication. We are confronted with the appalling fact that they are even permitted to associate and to have children in some of the very institutions provided for their care. Their offspring are bound to be defective, including criminals, prostitutes, paupers, as well as all varieties of feeble-minded, epileptic, insane, and generally degenerate characters. At least, each one of us, individually, can exert his own influence in his locality against the intermarriage of such, or their mixture with normal and healthy strains.

Regarding *idiocy and imbecility,* it is clearly unnecessary for us to speak, for no one can question the crime either of allowing such to propagate or of immoral relations with them on the part of healthy men.

Epilepsy is well known to run in families, for although the disease itself is not inherited there seems to be a peculiar deficiency of the nervous organization which makes the victim susceptible to it, just as a similar weakness may predispose another to insanity. In the course of smoothly running events and in a state of good health these derangements may not assert themselves, and the importance of physical culture in cases of this kind cannot be overestimated. They should try to live outdoors, avoid exciting, nerve-exhausting influences, and take advantage of every possible means of maintaining a normal physical condition. In this way they may live through their entire lives without suffering from these distressing disorders. But yet, when in poor health, and under the stress and strain of trying circumstances, the inherited weakness will assert itself. One should think long before marrying into a neuropathic family, for, certainly, it is always better to select those whom one may be sure are absolutely sound in every way.

Susceptibility to disease in many other cases is similarly the result of a peculiar lack of resistance which seems to run in the family. It is well known that many diseases run in families, this being true not because they are inherited in themselves, but because a tendency toward such diseases is said to be inherited. This "tendency," however, is invariably the lack of vital resistance. And in practically every instance, these diseases may be avoided by maintaining a high degree of vitality and a pure state of the blood.

Tuberculosis, for instance, will not be acquired if one lives a normal and healthy life, no matter if the death through this disease of many others in the same family may have proven the presence of a peculiar susceptibility to it. I mention this disease particularly because there is so much discussion as to whether or not it is well to marry into a consumptive family. As a general thing it would not be advisable for two persons from consumptive families to marry each other, for some of their children at least would be exceptionally lacking in the quality of resistance to this disease, and perhaps in the general fund of vitality. A member of a consumptive family, however, should not necessarily be discouraged from marrying one whose family is strong and vital, and who would therefore supply what the other is lacking in this respect. This is a disease that will eventually be stamped out, or at least will be completely eradicated from among those with sufficient intelligence to learn the lessons of right living and health building which we are striving to teach. And what I have said in regard to consumption applies also to diseases of the kidneys and most of the other disorders that seem to be "hereditary."

ALCOHOL.—It is a matter of common opinion that it is an unfortunate thing to marry a victim of chronic alcoholism because of the personal inconvenience of living with him and the poverty which is almost certain to accompany it except in the case of the man of wealth. But truly the most vital reason for not marrying such a person is his unfitness for parenthood. The poison alcohol is not only detrimental to the individual but destructive to the race as well. While, as we have seen, the germ-plasm is fairly well protected against ordinary external influences, and even against injuries and changes in the person of the individual, yet this poison so thoroughly impregnates every fiber and tissue of the body that it reaches the very germ-cells themselves. The germ-cells are nourished by the blood, and when the circulation is heavily charged with alcohol the germ-cells are so affected as to give rise to defective children. Such children start life with imperfect nervous systems and a defective brain development. While feeble-minded, insane and epileptic parents beget demented, epileptic and otherwise neuropathic children, it appears that all of these conditions may also be the result of years of soaking in alcohol of the germ-plasm from which they sprang. A man who had formerly had several normal children has had imbecile offspring after becoming a drunkard. Similarly, a woman who has had feeble and sickly children, dying in infancy, by a drunkard, has afterward had sound and vigorous babies by a healthy, normal man. Certainly, no one can afford to marry a drinking man, either to reform him or for any other reason, or, if married to one addicted to the habitual use of this poison, one certainly should not have any children by him after the habit has been acquired.

Other Habits.—The deleterious and tragic effects of narcotics and poisonous drugs upon the individual are well known, but their results upon offspring have not been sufficiently observed and studied to enable us to say very much authoritatively regarding them. Alcohol is unquestionably the most important of race poisons, but there is good reason to question the safety of marrying any one who has been or is the victim of heavy dosing with narcotics or any other poisonous drugs. We have heard of a case of a man who, after having healthy children, acquired the cocaine habit and thereafter became the father of two idiots. Chronic lead poisoning has been found to result in imbecility and cretinism, being unquestionably detrimental to the germ-plasm as well as to the body tissues of the individual. Those engaged in occupations which give rise to lead poisoning, therefore, should find some other occupation, and should make certain that all traces of disease from this source have been eliminated, before placing themselves in a position to become parents.

We cannot say just what will be the result of various drugs and narcotics in various cases. The instances mentioned may be extreme. But when the blood stream is filled with active poisons and the tissues saturated with them, we may naturally conclude that there is also a destructive influence upon the germ-plasm, or at least a loss of its vitality. We know that this is terribly true in regard to some, and it is still a question as to what extent it is true of the others.

THE "BLACK PLAGUES."—The question of venereal disease is one which every woman contemplating marriage should take into consideration, for in these days when the so-called "black plagues" are so very common and widespread there is always the danger of frightful consequences to the union.

The poison of syphilis, like that of alcohol, exerts its pernicious influence upon the germ-cell, causes defect and deformity in the offspring, and transmits the disease itself. The horrors of this disease, both in the individual and in its transmitted form, are among the most hideous facts of our sordid and disgraceful civilization. The disease is discussed in a later chapter of this volume, but I have referred to it here because of its relation to heredity and the question of marital selection.

The other black plague, gonorrhea, is likewise far more serious than commonly supposed. Though it seems local in its manifestations, as compared with the deeply-rooted and constitutional character of syphilis, and is not transmitted to the offspring in the same way as the latter, yet there is always the danger of infection of the child's eyes in the course of its birth. Gonorrheal conjunctivitis is truly a most violent form of disease, requiring usually not more than three days to accomplish the complete and irreparable destruction of the sight. A very large per cent. of all those who have suffered from blindness from birth are the victims of this particular infection, growing out of the past vicious folly of the father. If the prospective wife is not influenced by the possibility of a condition of this kind, then she will find food for reflection in the fact that in countless thousands of other cases gonorrhea is responsible for complete sterility or perilous surgical operations in which the abdomen must be cut open for the removal of hopelessly diseased parts. Not an alluring matrimonial prospect! This disease, also, is taken up in detail later in this volume.

It is obvious, then, that venereal disease means absolute unfitness for marriage or parenthood. Marriage under such circumstances is a crime of the most heinous type, even though not subject to legal punishment. Although these diseases may be cured in most cases by very strict adherence to the natural treatment I have outlined elsewhere in these pages, yet the patient should forego marriage at least for the period of time that may be necessary in some instances to thoroughly eradicate from the system all traces of the poison.

Faith in the man of her choice is one of the beautiful traits of a truly feminine nature, and such faith in his good health and pure blood is to be expected in practically every case, even when it is destined to be blasted by the hideous developments and discoveries that will follow marriage. Such faith is more beautiful than safe. Again, the first victim of the disease may regard himself as "cured," because the external manifestations may have been temporarily smothered or obscured by medication, while in reality the virus of the plague is still strongly intrenched within his body. The question of disease is a question of fact, a fact which may be and should be ascertained before joining hands in wedlock. It is the duty of every father to ascertain the absolutely true condition of the health and blood of his son-in-law to be, for the protection of his own daughter. On the other hand, any normal and right-minded young man will be anxious to protect his intended, and at the slightest suggestion will be glad to secure and present a certificate of his health and cleanliness. If there is doubt in the matter, the certificate should come, not from the family physician inexperienced in such matter, but preferably from a specialist. For though we may not approve of all the methods of treatment employed by such a physician, yet the question of the presence of the disease is a question of fact which he is able to determine absolutely.

PRENATAL CONDITIONS.—For the sake of having healthy, vigorous children, too much emphasis cannot be placed upon the importance of prenatal conditions. The health of the mother at this time is a matter of vital concern, inasmuch as the nutrition and development of the child depends entirely upon her condition. The blood of the mother not only serves to supply nourishment, but oxygen as well, at the same time carrying off the carbonic acid and other wastes incidental to the rapid growth and tissue changes of the embryo. All of this will be taken up in detail in a later chapter, dealing with pregnancy and motherhood, but there are some aspects of the subject which should be referred to here because of their relation to hereditary and other factors which determine the character and health of the new life before it is born.

The question of outdoor life and thorough ventilation is infinitely more important during gestation than at any other time, and we already know how vital it is at all times. Owing to the peculiar arrangement of the fetal circulation, which is made clear elsewhere by description and diagram, there is a considerable mixture of venous blood with the arterial blood supplied to parts of the body. In other words, even under the best circumstances, a great part of the body of the unborn child does not receive strictly pure and highly oxygenated blood. Therefore, if the mother breathes poor air and her own arterial blood is imperfectly charged with oxygen, the supply to the fetus is extremely unsatisfactory. In order that the most favorable development may proceed, the mother should breathe outdoor air at all times, or its equivalent in the house, so that she may carry in her arteries the greatest possible amount of oxygen. When in the house, ventilation which does not ventilate is not sufficient. The windows must be open, really getting the open air into the house, even if in winter it should be found necessary to spend an extra dollar for coal to keep the place comfortable with the windows open. This much, at least, one owes to the welfare and vitality of the unborn. Every woman, or at least every prospective mother, should thoroughly study and understand this matter, in order that she may realize the strict necessity for proper care in this respect. I need scarcely add here that this open air program will usually be sufficient in itself to relieve or enable one to avoid the nausea and other common annoying symptoms of pregnancy.

In view of the special importance of an abundant supply of oxygen at this time, we may the better see how reprehensible is the old-fashioned habit of remaining confined to the house, shrinking and unseen, for several months prior to the coming of the one who, after arrival, will be loved by the mother more dearly than life itself. We may see how criminal is that prudish and false sense of modesty which actuates the coming mother in remaining at home, and how damnable that prurient, boldly staring, snickering and generally cheap and vulgar attitude of the public which causes the sensitive woman to shrink from exposure even when she herself is free from any impure or prudish views of her condition. But if she thinks of the welfare of the precious little life which it is her privilege to care for, she will throw aside all regard for such considerations, and will arrange somehow to be out-of-doors as much as possible and to have fresh air in her rooms at all times.

Another matter of special importance is the necessity for avoiding alcohol and drugs of every description during pregnancy, this relating to and following upon what we have said about alcohol and other poisons before conception. Just as nutrition is supplied to the fetus, so may alcohol and other poisons pass into the fetal circulation with results far more disastrous than one could judge from observing the effects upon the adult organism. Just as alcohol is infinitely more injurious to the delicate, growing tissues of the infant or child than to the matured and better resisting structures of the grown up man or woman, so the results of alcohol upon the sensitive nerve and brain cells of the unborn, as well as upon the entire vital and functional organism, are destructive in the extreme. Physical deformity may thus result from arrested development or general disturbances of function, while various degrees of mental defect, ranging from slight mental incompetency to imbecility or idiocy, represent the appalling cost which one innocent individual may have to pay for the folly and sins of another. No one is more unfit for motherhood than the habitually drinking mother, and yet there are thousands of others who ignorantly add to the sum of the world's misfits and unfits through the use of "tonics," the chief stimulating factor in which is alcohol.

Other drugs and poisons act in the same way, being far more potent in harming the tissues of the unborn than to the increasingly resistant organism of any later time of life. Not merely should patent medicines be eschewed at this time, but all medicines of any kind, and if the physician is rash enough to prescribe his usual forms of medication, then at least those who have had the opportunity to read these and the foregoing pages will know better than to take them.

MATERNAL IMPRESSIONS.—In discussing prenatal conditions, there will arise in nearly every mind the question as to the "marking" of the child, to use an old-fashioned term, or the possibility of stamping his mental or physical make-up with peculiarities, deformities or unusual tendencies because of the thoughts or experiences of the mother during gestation. On this point we are able to offer positive assurances of the immunity of the fetus from such influences, which will possibly lift a heavy burden from the minds of many women.

The theory of maternal impressions, or of "marking" the unborn, as commonly understood, is as old as was the one time theory that the earth was flat. And it was founded, in its early days, upon just as good logic as the conclusion that the world was a great flat expanse resting upon no one knew what. Countless thousands of mothers have lived through miserable periods of pregnancy, tormented and crazed with their fears that through some small incident, some sight which they beheld, or some hideous word, they had "marked" their offspring with some ineradicable deformity or morbid tendency. Sleepless nights at a time when sleep is most required, interminable worry and depression at a time when happiness is most important because of its favorable influence upon the general health, have been the cost at which this superstition has been harbored even to this very day. Perhaps almost as much harm has been done by the fear of having ruined the child before its birth, as would have been accomplished if the theory were true.

Now, I want to say with emphasis that the only maternal impressions which are possible are those which affect the health, vitality and general physical welfare of the child. And the more we study these matters, the more we see the importance of the physical culture mode of life. For instance, we have already referred to the influence of alcohol, which is taken into the child's circulation just as is its oxygen and food. If the mother is poorly nourished and her blood deficient in the proper nutritive qualities, the child will suffer. If there are diseased conditions or disturbances in the organism of the mother, they may affect the child, but only because of and through this matter of the dependence of the latter upon the former for sustenance and elimination. In such ways maternal impressions are possible, affecting the physical welfare of the fetus, but not its temperament and inherited make-up. Mental gloom, worry or grief on the part of the mother will not directly affect the child's mind in the same way, but may cause such an impairment of the former's appetite and general health as to affect the nutrition of the latter. In this way only, do the thoughts of the mother affect the child.

It should be remembered that the embryo is the outgrowth of the single impregnated germ-cell, which contains within its chromatic material all of the factors and forces which will develop into a complete individual. Its constitution or temperament is already determined, needing only favorable conditions for its perfect development. Its potential qualities are all there in the germ-cell, and in the case of a bird it is only necessary to be supplied warmth and the nutrition stored up in the large egg. In the case of a human being, the nourishment is secured through the placenta from the blood of the mother. But here we should observe that, as the student will see later, the blood of the mother does not flow into and through the veins of the child as might be supposed by those uninformed. The blood in the body and vessels of the fetus is its own blood which, flowing to and from the placenta, there passes so close to the blood of the mother, that particles of food and waste may be interchanged by passing through very fine membranes. Oxygen and carbonic acid are interchanged in the same way, but without any mixing of the two blood streams. Poisons may enter the system of the child in this way the same as nutrition, but aside from this, and aside from disturbances of nutrition, oxygenation and elimination, the mother's thoughts and condition do not affect the child. Direct mental impressions, commonly thought to be so potent one way or another, cannot be made, for there is no connection of the nervous system of the one with that of the other. The child is as much a distinct individual a month or an hour before it is born as it is an hour after this critical event, except for the physical dependence referred to.

It is an open question as to just what extent a mother may influence the mental and physical characteristics of her offspring. While it may not be possible for the mother to directly influence the mind of the unborn child to such a degree as to adapt it to any particular training or walk of life, it seems unquestionable that the condition of the mother's mind during pregnancy has much to do with the mental qualifications of the unborn child. For instance, a mother who feels that by a study of works of art, of literature, or of music she can invest her unborn child with the ability in the particular sphere of art in which she is most interested, may not always be successful. Nevertheless, the betterment of her own mentality which must ensue through her attempts to thus attain improvement cannot fail to favorably influence her little one's mental equipment.

Cases of deformity which have been attributed to "marking" would better be attributed to corsets, medicines, arrested or disturbed development from alcohol, or to other adverse influences. If all of the experiences and sights of the pregnant mother were stamped upon the constitution and temperament of the child there would probably be very few of us who would not be deformed and demented in various ways. We can only marvel at the wisdom of Nature that she has so arranged matters that the helpless and delicate man in the making is not subject to adverse influences from every incident or unpleasant sight that may come to the mother. The stability of the race and its continuance in a normal and healthy state are insured thereby.

But it may be said that every one has heard of cases of "marking." We have all heard of them, but when we stop to think about it we note the fact that we have only heard of them, that we have not seen them among those whom we know, that they do not happen in our own families. The most careful investigations seem to show that the reported startling cases of this kind are sometimes merely coincidences, or that, as is more often, indeed, practically always the case, qualities thought to have been the result of prenatal influence are really the result of heredity.

The great lesson to be learned, therefore, is that the mother can favorably influence the health and vigor of her unborn child, that she may, by making the most of her own physical condition, add to its vitality of body and of mind. But if she has experienced a fright, or has been suddenly shocked by the sight of a mutilated body or other horrible object, she can go on her way as she would in any other circumstances, trying to forget it for her own sake, and without any endless fears and sleepless nights of worry over the thought that she has so stamped her unborn. She may go on striving to be healthy and happy, assured that her baby, when it comes, will be normal.

SOME POPULAR MISCONCEPTIONS.—There are some who claim that mental impressions are readily made upon the embryo by anything unusual in the mental condition of either parent at the critical time of conception, but this is extremely doubtful. For while a state of intoxication, for instance, would be likely to cause permanent injury, for the reason already observed in referring to the destructive effect of this poison upon the germ-plasm, this is very different from saying that a special mental impression can be made in the manner supposed, when both are in a state of health and the relation a normal one.

The all important question here, as everywhere in the consideration of the requirements of parenthood, is the question of health and vitality, so that the offspring will be as vigorous as possible, no matter how the temperament, talents and inclinations may be determined by the divisions of the various hereditary factors in the maternal and paternal germ-cells, and the special combination of these in their union as the embryonic cell.

Sex has been so little understood, and so little studied, that it is perhaps only natural that a vast amount of mysticism should have grown up around it.

Sex passion, for instance, has in some quarters been regarded as a deplorable factor in conception, being supposed to exert a mystic and sensual influence which will cause the offspring to be unusually erotic and licentious. Ardent but misguided writers of fiction have even written alarming stories in which the hero, or victim, is represented as having been cursed with abnormal proclivities in this direction, impressed upon him through the passion of the father at the time of conception. All this sort of thing is sheer nonsense. Vicious habits and extremes of sensuality are instead to be attributed to the prurient prudery which has, to a greater or less extent, poisoned the minds of practically all human beings born in civilized society. We are all usually born normal in this respect.

Sex passion is not in itself essentially or inherently evil. It is a perfectly natural and normal expression of the race instinct, the reproductive impulse, which has been made imperious and well-nigh irresistible in its nature and demands only because this is necessary to insure the perpetuation of life. There is nothing impure in this race instinct, but there may be immorality in the use which one may make of it, the perversion or abuse of it. I am not saying that sex passion does not need restraint, for such restraint is one of the most vital requirements of life, as the reader will see in the succeeding chapter. As a matter of fact, Nature herself has provided for a large measure of this restraint in the normal instincts of the female, which only need to be obeyed closely. But this also is discussed thoroughly in the next chapter.

However, the habit of speaking of passion as one's animal nature, or lower nature, is no more justified than would be the practice of speaking of the appetite for food as one's animal nature. In a sense it is true in both instances, because a human being is fundamentally an animal and ought to be a good specimen of one. But that there is anything unnatural, or wicked, or vile, in the reproductive instinct is untrue. If one tells lies, this does not make the power of speech a thing of evil. The evil lies further back, in the mind of the offender, which directs the misuse of a high function. The sex instinct is the source of all that is sweet and beautiful in the love of a man and a woman, the vital force that draws them to each other and holds them together, and which, if not perverted, will provide for their lifelong happiness and appreciation of each other. Held in its proper place, its subtle influence will make even their mental companionship more interesting.

And while the expression of this passion should be guided by feminine instinct, and further restrained by intelligence, discretion and a refined sense of self-respect, it should be recognized that it will not under any circumstances give rise to abnormal qualities in the offspring. If the latter should develop such morbid propensities, and it can be clearly proven that they are not the result of vulgar associations and misguided education, then we may rest assured that they are the result of hereditary factors, and not due to the supposed "unrestrained brute nature" of the man at the time of conception. The real trouble in such cases is probably a lack of the inborn qualities which make for refinement, self-control and consideration of others. Let us see these things straight and understand the truth in regard to them. The reproductive instinct itself should not be vilified as a power intrinsically base.

HOW IS SEX DETERMINED?—There has always been a great amount of speculation upon the question of the determination of sex. Again and again supposed *laws of sex* have been formulated only to be found as unreliable and untrue as those which had preceded them, until now at last we know that there is no way by which we can voluntarily predetermine the sex of any particular child. We know now that sex is decided entirely by a chance which is not unlike that of the tossing of a coin. The chances of the baby being either a boy or a girl are about equal, just as the total number of those of each sex who come into the world are, approxmiately, equal.

Many hopeful mothers have tried to influence the sex of their little ones by concentrated thought and desire during gestation, but to no avail, for the sex of the new life is already determined at the time of impregnation. Again, it has been supposed that the combined thought and desire of both parents prior to and perhaps at the time of conception, would have some influence in the matter, but this likewise is ineffective. Some have formulated a so-called law that the *predominant germ* (a rather vague and indefinite term, used in this respect) determines the sex, producing the opposite sex, the question of dominance depending upon the relatively passive or positive condition of the two parents. This, however, has been found to be merely a wild guess, a theory without foundation.

Others have held that a well-nourished and vital condition of the parents is likely to produce girls, whereas a lack of food and hardships which reduce the vitality favor the reproduction of males. A theory which has received a great deal of attention holds that the time of conception plays an important part in determining this matter, it being supposed that impregnation very soon after the cessation of menstruation would result in a girl, while a boy would be expected if fecundation were delayed until some days thereafter.

But all of these theories fail to stand the test of experience. Incidentally, it should be remembered by those who desire children, that conception may take place at any time during the fifteen days following menstruation, or the five days previous, thus leaving an interval of some eight days during which conception is altogether unlikely.

Finally it seems that sex is really determined by a special factor in the chromatic material of the germ-cell. The ripening and division of the male germ-cell leaves an equal number of matured sperm-cells with and without a peculiar sex-determiner, so that the gender of the individual depends upon whether one or another of these happens to impregnate the ovum. The detail and method of this, and the part played by the sex factors in the female germ-cell, are too technical for us to take up here, as well as unnecessary. But it is sufficient for us to know that if we have had the desire or hope of deciding the question of sex in advance, we may as well give it up and spend our time thinking of other things that we are really able to accomplish.

But though a choice and predetermination of sex is impossible, many women who have had a number of children claim to be able to ascertain or recognize the sex of the fetus by "the way it is carried." They have observed some appreciable differences, apparently, and assure us that boys are usually carried well out in front, and perhaps fairly well up, while girls seem to be located further back between the hips, giving the back a greater breadth. I mention this for what it is worth, though with the reservation that one must not be surprised if she is disappointed in her anticipations, judged from such indications. Some mothers have also stated that they can judge by the relative activity of the fetus after the fifth month, believing that boys are more energetic and vigorous in their movements than girls. This supposition, however, has been found misleading in so many instances that it is better not to consider it.

TWINS.—To the average reader the subject of twins is perhaps not so important as it is interesting. They are said to occur about once in a hundred and twenty cases, while triplets may arrive once in about eight thousand births. Quadruplets will probably happen two or three times in a million human births. If twins have occurred among your forebears then it is entirely possible or likely, if you have a large family of children, that you may have them at some time, for the tendency to produce twins seems to run in families.

Twins are the result usually of the ripening and discharge of two ova in one month, both of which are fecundated at or near the same time. Triplets and quadruplets arise in the same manner. It sometimes happens, however, that twins are produced from a single impregnated ovum as the result of the *fission* or division of the latter. When twins are produced by two fertilized ova, each fetus has its own placenta, amnion and chorion, while when they are the result of fission in a single fertilized ovum, they share one chorion and one placenta. About the only way in which the existence of twins can be recognized before birth is by the sound of the two separate fetal heart-beats, at different points.

The very startling and striking resemblances in twins of the same sex, resemblances in disposition and mental tendencies as well as in appearance, are probably always the result of a common origin in a single embryonic cell, a case of fission, both having come from the same identical combination of hereditary determiners. When twins are of opposite sexes, it is clear that they are the result of the separate impregnation of two distinct ova. Sometimes, in the case of twins produced by fission, the process of division is incomplete, and the product is a pair who are grown together in some way or other, with more or less deformity. The so-called Siamese Twins, famous all over the world, and others who have been exhibited as museum freaks, were produced in this way.

CHAPTER II.

PHYSIOLOGICAL LAWS OF SEX AND MARRIAGE.

IN the previous chapter we have considered chiefly the parental aspect of reproduction, but the relation of sex to the life of the individual, and the personal relationships of men and women, as such, are matters which no less urgently demand the closest attention in our education. It is from this point of view that I shall discuss the reproductive instinct, or as we may call it, the race instinct, in this chapter.

SEXUAL HYGIENE.—Sexual passion, as we have already seen, is the expression of the race instinct, the force through which, in its culmination, is accomplished that union of parental or germinal cells which marks the inception of a new life. It is apparent, in the very nature of things, that this force is the most vital force in life, and that any waste or dissipation in this direction is far more devitalizing and serious in its consequences than any other possible waste of human energy. Waste of sexual energy strikes deeply at the root of life itself, undermining the nervous system, deranging the various functions of the body, and weakening the entire organism generally. There is no other phase of life in which ignorance or violation of Nature's laws are more severely punished than in the domain of sex.

There is, accordingly, no greater need than that of plain and thorough instruction in sexual hygiene, not merely for the young, but for those of adult years who have not, in their own youth, had the advantage of intelligent instruction and guidance in these matters. There is nothing more deplorably true than that the majority of even those who are married are not conversant with the very first and most fundamental of the physiological laws of sex.

One of the very first requirements of sexual hygiene for those of each sex is an understanding of the physical organism forming the channel through which the continuity of the race is accomplished. Details of the anatomy of the generative system in each sex are given in separate chapters in this volume, containing special reference to the importance of cleanliness and the general care of these parts, all of which should be carefully studied, along with the following general considerations.

HEALTH AND SEXUALITY.—Health of the entire body is the very first essential to perfect sexuality, and the first requirement of sex hygiene is care of the body in order that one may have clean blood and the maximum of vitality. The love instinct is largely controlled by and dependent upon the general state of your physical health. Many of those who are struggling with marital difficulties will be able to solve their problems with little trouble as soon as they learn that the love instinct has a physical basis, that it is, indeed, the expression of the physical impulse that makes for parenthood. This fact is fundamental, and the more perfect and vigorous the health, or in other words, the more normal the entire organism, the more acute and perfect will be the sex instinct. In a general way it may be said that the condition of the sexual system is usually indicative of the general health, its power increasing or decreasing in vigor accordingly.

Modern civilized life is no more conducive to a normal sex instinct than to the most perfect degree of general health, for the artificial influences met with upon every hand are of a stimulating and exhausting nature. The nervous hustle and hurry of our cities, the noise, the strain of financial and business life, the unwholesome recreations, the late hours at night—all are inclined to upset the well-balanced life which in a state of nature we could easily maintain. Only he who understands his own nature and his needs can hope to be either physically sound or sexually normal in this strenuous, neurasthenic age.

For the sake of vigorous sexuality, accordingly, I would especially recommend healthful, outdoor exercise, early hours, plenty of sleep in fresh air, and all of the general conditions for building health and vitality expounded in the preceding volumes of this work. Whole chapters could be written here in regard to alcohol, tobacco, drugs, tea, coffee, corsets and similar evils in their relation to sexual hygiene. Inasmuch as these subjects have been discussed in other parts of this work, however, we need not do more than allude to them here, with special emphasis upon their destructive effects as far as sexual power is concerned.

Alcohol, drugs, narcotics, tea, coffee and the like act directly upon the nervous system and play havoc with sexual vigor. Remember that all of these things which affect the body as a whole in an unfavorable way are especially detrimental where the reproductive power is concerned. They are not only conducive to the individual harm which is so clearly apparent, and to marital unhappiness, but have even more serious consequences in depriving the offspring of that intense, primordial vitality which should be the birthright of every child.

Dress.—The matter of clothing is one which should have special attention, inasmuch as an excess of clothing, too heavy bed coverings, rooms that are too warm, and all other unnatural influences that tend to overheat the body are of a stimulating nature and sometimes conducive to sex excitement. Wear no more clothing at any time than absolutely necessary for bodily warmth and comfort.

Women should give special attention to the subject of corsets and clothing generally, as discussed briefly later in this volume and also in Vol. II. Clothing that constricts the body not only is directly injurious and destructive, but it often has a further unwholesome influence in the way of inducing sexual excitement. Corsets are not alone in this, for even without a corset a tight skirt band, or the weight of heavy skirts and petticoats dragging downward from the waist when the band is not tight, will produce pressure upon the abdominal region and force the pelvic organs downward. More and more as the young woman grows older, and especially after marriage, this is conducive to the condition of prolapsus or falling of the womb, or to some other displacement. But even before the evil is carried this far, the result is more or less irritation, heat and general inflammation of the female organs. When this is short of actual pain it may readily be misinterpreted as the stirring of sexual passion, or it may actually give rise to such generative excitement. It is an utterly artificial, unnatural and unwholesome condition, and young women should be taught to avoid anything in the nature of badly fitting clothing that will lead to it. Loosely-fitting, cool and comfortable garments are as necessary for the sake of true sexual health and hygiene as for the health of the body generally.

All forms of clothing which are of one piece, or which are designed to hang from the shoulders, are especially commended.

Bathing.—Every one should cultivate cool air and take air baths as often as possible. They have a splendid effect in toning up the nervous system and in quieting tendencies toward undue generative excitement. Aside from the demands of cleanliness, cold baths and especially cold sitz baths are valuable in this particular respect, also acting powerfully as a means of building sexual vigor. (See Vol. III.)

Lying in Bed.—One of the best habits to form early in life is that of getting up instantly upon the moment of awakening in the morning. Get out of bed immediately and be busy about the affairs of the day, preferably starting with exercise and bath, unless the daily exercise is more advantageously scheduled for some later time of day. Similarly, it is unwise to go to bed until physically in a condition to profit by the rest and to fall asleep immediately. Heavy bed covering or an excess of it should be carefully avoided.

Diet is unquestionably an important factor in attaining a condition of normal and vigorous sexuality. The average diet of to-day is altogether too stimulating in character, and if we could get back to the simplicity and wholesomeness of the diet of pioneer life, it would be better for the entire world. Much of the depravity and crime that arise from distorted, over-stimulated, one might say diseased sexual instincts, would be unknown if the average food supply of each individual in the nation were reduced by one-half and restricted to edibles of a wholesome character.

Pepper, condiments, hot sauces, tea, coffee, alcoholic beverages, white flour and many other articles commonly found on the ordinary table, are inclined to excite the sexual passions and should be avoided if one desires a life of high aims and refinement of character. Meat likewise has a stimulating tendency in this direction and is better left alone, particularly if one is in a position where he must contend against abnormal desires or the force of injurious habits. At least, if one is unwilling to adopt the vegetarian diet in its entirety, he should restrict himself to a very small allowance of meat, which is all that could be desired anyway for the mere needs of bodily nutrition. The requirements of diet for the most perfect bodily health, as thoroughly outlined in Chapters XI to XVII of Volume I, will also apply to the needs of building the highest degree of sexual power.

Control of Passion.—It is often said that sexual passion may be controlled and lessened by a cooling non-flesh diet, cold baths, exercise, an active, busy life, outdoor sports, long walks and other health-building measures. However, it is not true that we will thereby bring about any lessening of passion or of sexual power, which would indeed be undesirable. What we should understand in this connection is that by a satisfactory diet and these other means of acquiring clean, pure blood and improving the general health, we will only increase the power of sex passion through our increased vitality and nervous energy. But, and here is the essential point, we will at the same time avoid the stimulation and abnormal excitement of this passion which in the past and present has done and is doing so much harm in the lives of human beings everywhere. Instead of a weakened, nervous system, and an uncontrollable sexual impulse, which may be regarded as not altogether unlike the symptoms of hysteria or other nervous derangement, we shall, with the physical culture life, acquire a sound and steady condition of nerves and a far stronger sex power which is well-ordered and under control.

Constipation is one thing that should always be remembered in considering the matter of sexual hygiene, for though apparently not directly related, this condition indirectly has a tremendous influence in falsely stimulating or exciting the generative system, always, of course, with an ultimately weakening effect. It is chiefly for this reason that I mentioned white bread as an undesirable quantity in the diet of one seeking to live a chaste, pure life. Constipation not only tends to poison the system and cause derangement in that way, but acts directly by pressure upon the adjacent parts of the generative system, in women upon practically all parts, in men upon the prostate gland, causing an irritation which is readily mistaken for the natural expression of a normal passion.

I cannot take time here to say more about this phase of the subject, but it should be sufficient merely to mention it with all possible emphasis. The amount of rape and murder which in this way may have been clearly the result of constipation, is a matter concerning which we can never know, though probably far beyond our wildest speculations. It is curious that crime always increases with civilization, and the artificial conditions, rich diet and physical derangement that go with civilization.

If there is even a moderate tendency toward costiveness, I would advise a careful reference to the discussion and treatment of Constipation presented in Volume IV, p. 1953.

For very similar reasons it is important to see that the bladder is emptied at regular intervals. Many children are prone to neglect the calls of nature, and they should be very thoroughly instructed in the necessity of attending to themselves in regard to both the movements of the bowels and the passing of water. Eating and heavy drinking on going to bed or just before, should be avoided. There is no question that a full bladder, by pressure upon the prostate gland, has a great deal to do with the causation of the erotic dreams of which young men often complain, and the nightly emissions which accompany them. And in the same way it is likely to cause an unnatural state of excitement at other times.

CONSERVATION OF VITAL FORCE.—Supporting what I have said in regard to the importance of health and all-around physical vigor, I would say that the keynote of sexual hygiene in its larger aspect is the conservation of energy or vital force, as it is expressed through this particular channel: As I have said, waste or dissipation in this direction is far more disastrous than any other common form of dissipation, except perhaps in the habitual use of the poison alcohol.

It does not matter in what form this waste of vital energy occurs, whether in immoral and promiscuous relations with the people of the streets, in the excesses of married life, to which I shall refer later, or in those deplorable solitary vices which exercise a blighting influence upon life in the very bud, as it were. The perils and the results of masturbation should be made clear to every young mind with such vividness that no boy or girl would dare to commit such an indiscretion. The subject is discussed in another chapter in this volume, while a routine of treatment is presented in Vol. IV.

But all other excesses and perversions are similarly devitalizing in their influence, and all of them infinitely more injurious when practiced before complete physical maturity. Serious chronic diseases of all kinds may in many cases be traced directly to the vital depletion that results from these various vices. It lays the foundation in many cases for pulmonary tuberculosis, Bright's disease or some other malady that finally carries off the victim, who, had he retained the vigor wasted through his folly, might have lived a long and useful life. Hospitals and sanitariums are filled with sufferers from insanity and other mental derangements who were only the victims of that ignorance which has permitted them to fall into mistaken habits of this kind.

It is hardly necessary for our purposes to enter into a discussion of prostitution, for the terrible nature of this form of social disease is generally well known. And it hardly seems necessary to say that prostitutes should be avoided above all things, not only for the sake of maintaining virility and self-respect, but also to avoid the loathsome, blood-poisoning diseases, gonorrhea and syphilis, both of which are considered in detail in another chapter.

How much better, on the whole, that the youth passing from boyhood to young manhood devote himself to athletics and sports, concentrating all his surplus energy upon these wholesome pastimes and thus taking up all of his time not consumed in his studies and education. And after all that has been said in ridicule and disapproval of college athletics, how much better for the young man who goes to college to "go crazy about football," running, hurdling or hammer throwing, yes, even if he breaks a rib or sprains an ankle once in the four years, than to join that other army of so-called "sports," who spend the nights and their fathers' fortunes in riotous dissipations, including the sexual vices.

The seminal fluid is the most precious and concentrated secretion of the human body, some students holding that one part is equal to many parts of pure blood. A man without a seminal accumulation is listless, lacking in animation and charm. The sexual instinct is the man in the man, and woe to him who loses it. Intelligent athletes are familar with the relation of their strength and endurance to the conservation and continence of sex energy. Self-control practiced in sex matters is of greater benefit to character and health than in any other phase of human existence.

The question of strict continence I shall take up a little later in this chapter in relation to proper conditions of marriage, inasmuch as it bears with just as much force upon the lives of those who are married as upon those who are not.

MENTAL ATTITUDE AND HABIT.—In no other phase of life or of health does the attitude of the mind play so important a part as in its relation to sex. Improper thoughts quickly become habits of mind which before long may so grow upon one that his every view of life is colored, or we should say, discolored, by his erotic outlook. Sex and its expression become an obsession. Unfortunately, in our perverted artificial civilization, a natural and pure-minded attitude toward the facts of life is very exceptional.

It is a very dangerous thing, indeed, for the young mind to allow itself to dwell upon the sensual side of life lest very shortly it shall find itself so fastened in the habit of so doing and so poisoned with sensuality that it is almost impossible ever again to regain a normal state with a wholesome viewpoint.

It is highly important that young persons learn to regard the members of the opposite sex from some other than the standpoint of sex. In other words, one should learn to look upon an attractive member of the opposite sex as a personality instead of merely as a sex creature. One should be alive to the mentality and spiritual qualities of the other, and so long as this attitude is maintained it is not likely that the mind will be dominated by an overwhelming sense of the physical attraction of the other.

In connection with this subject of the mental attitude of the young person, the discussion of *Prudery* elsewhere in this chapter should be carefully read.

COURTSHIP, LOVE-MAKING, ETC.—The requirements of sexual hygiene, as well as of good breeding generally, require an avoidance of too much personal familiarity between those of the opposite sexes. I have always advocated a large acquaintance among those of opposite sexes, and their commingling together in school, at work and in wholesome pleasures. But the relationships should be strictly of a social nature. It is perhaps only natural that the romantic but irresponsible boy should enjoy the pleasure of a "good-night kiss" at the front gate, if he can get it, after an evening spent together, but while it may be harmless enough in some instances, yet it is not a practice to be recommended. Grandmothers are right in frowning upon such behavior, though not in favoring complete segregation of the sexes. One kiss is likely to lead to another, and yet another, and still another, after the fashion of alcoholic drinks. But this intoxication of the senses is far more seductive and may be far more dangerous than that produced by any wine.

Self-restraint is perhaps the most vital and important principle of human conduct, the most necessary to a happy and successful life. In the first place, this freedom in the expression of amorous instincts may lead to moral disaster, as it so often has. But even if both parties are possessed of strong powers of self-control, the amative excitement aroused is woefully destructive to the nervous system and detrimental to the health generally.

The close, warm, personal embrace of a pair mutually attracted to each other in a physical way can have only one result. Under the spell of this physical magnetism each will fancy that it is love, or at least will say that it is love, in order to dignify it with a well-sounding name. If the girl is more or less passive, and as uninformed as most young women of the past have been, she may possibly fancy that these kisses, caresses, embraces are the manifestations of a very intense love which the young man holds for her. But the truth is the truth, and we should always speak it frankly. And the truth here is that these are only the manifestations of a physical attraction. There may be love, or there may not be. And it may be a passion which will forget its temporary object as soon as it is satisfied. Hundreds of thousands of trusting and confiding girls have gone to their ruin through ignorance of this fact, and if there are still young women who do not know this, it is our duty to tell them plainly.

There are many who feel that an engagement gives one many privileges in the way of love-making, but the weakening effect or the other evil consequences are just the same in such a case as in any other. One would naturally not attempt to prescribe any set limits to the personal relations of engaged couples, but if they go too far the result will be a drain upon their nervous and sexual systems and a general derangement of health. In an engagement it should be regarded as an important necessity to avoid laying emphasis upon the physical relationship or the physical attraction, if only to make sure that the mental and other qualities are such as will make for a happy and successful marriage. If one is blinded by the spell of a physical attraction, he or she may marry one who, in character, in mentality and in other respects, is not such as to warrant such a matrimonial choice in a more sober state of mind.

Love making should never go beyond the limits set by a sincere respect for the person of the other. Young people should learn to regard their persons as sacred and private, demanding the respect of others. Life means so much in other directions, is so rich in clean and wholesome pleasures, so full of possibilities of every other kind, that one should above all avoid the premature awakening of the sex instinct, as well as undue emphasis upon its influence at any time. Let one possess vigorous sexuality in the highest possible degree, but let him also strive to go through life as nearly unconscious of it as possible.

Dancing.—The influence of dancing depends largely upon the attitude of the individual. Dancing of the ordinary kind is entirely unobjectionable, for it is so largely made up of the factors of music and rhythmic exercise, and the mental exaltation that go with them, that the element of personal contact becomes a negligible quantity, and the dance resolves itself into a purely social pleasure. Of course when the room is too warm and insufficiently ventilated, or the bodies of the dancers become too warm through excess of clothing, this overheating is detrimental. Public dance-halls are to be condemned because they are haunted by those who place a vulgar interpretation upon every phase of life, and who would naturally degrade dancing and corrupt those with whom they dance. Every once in a while, also, an attempt is made to bring into popularity some new "sensational" dance, usually recognized at once as of an objectionable character, but no self-respecting person of either sex would be guilty of indulging in such.

The Love Instinct.—Love, which is the higher interpretation of the sex instinct, represents the most powerful force in human character. Under right conditions it is capable of affording the greatest happiness conceivable on this earth, making life the beautiful and delightful existence that it ought to be. But thwarted, perverted, unrealized, love may bring misery, not merely as intense as the joy which it is capable of yielding, but so keen and bitter as to make life actually unbearable.

We have already seen the relation between health and perfect sexuality. If an individual is physically sound and normal in all respects, and his love instinct is right, it will be impossible to marry for money or convenience, or, in the case of a woman, to sell herself for any consideration. The love instinct, when highly developed, will give one almost an intuitive power of choice, and make it impossible to marry except under natural conditions and for the right reasons. Perfect health and a normal love instinct would bring us back to the pristine conditions of true "natural selection," which has accomplished the evolution and improvement of the race up to the present point, instead of the artificial occasions for matrimony which are now helping to hasten the growing degeneracy of ever larger and larger proportions of our population.

Normal and well-developed men and women have an instinctive power of "sensing" each other's sexual adaptation and responsiveness. It is this instinct or sense, which, if unhampered by false education or selfish interests, usually leads one to make the best available selection of a mate, being far more accurate and reliable in this respect than all the logical admonitions and preferences of friends or parents. Naturally, the girl or boy who has never had an opportunity of exercising this sense, through lack of association with the opposite sex of the same age, may not be guided accurately or wisely in his or her selection, and for this reason free social contact is imperative, permitting the best possible development of this sex sense.

The attraction between two of opposite sex may in some instances be purely physical, simply growing out of admiration for corporeal qualities and without any mental affinity, or in some cases, the reverse might apply. Love, to be lasting and complete, should involve the attraction and the supplemental qualities of both body and mind.

Love is the cognizance of those supplemental qualities in the other sex, without which the full maturity and complete growth of each individual is impossible, and when this "combined unit" mutually advances, each in its sphere of development, love is permanent and enduring.

Sex-consciousness and sex-expression should not be confined to the sex organs proper. On the contrary, this supreme instinct should find expression through all parts of the organism, through the social and, in some cases, the artistic life of the individual. He is unworthy of the possession of this great and vital power who can conceive of but one channel for its expression, and every woman justly resents it.

When we exalt the sex instinct to the highest and purest human function and no longer degrade it into mere beastly passion, the evils of unhappy marriage will vanish in nearly all cases. "Sex sensing" does not imply sexual passion. On the contrary, it is the instinctive perception of the vital and mental qualities of another, which may be of a nature harmonizing or repellent to self. As this sense is slower in its development than any other sense, it is not always recognized, especially since sexual passion in many persons creates an excitement that causes temporary self-oblivion. In women, as well as in men, perfect friendship and the pleasure experienced in each other's company, depend to a large extent upon the harmony of physical, as well as mental, qualities in each other, those of one supplementing those of the other, even though the two individuals are of the same sex. This also explains, in a way, the unintentional repulsion between persons that is occasionally experienced without apparent cause.

MARRIAGE.—While a man and woman may live separate lives in reasonable health and content there is no question whatever but that they are the mutual complements of each other and that their only complete life is found when they live together in a life of mutual affection. Whatever may have been the design in the mind of the Creator in regard to sex, we are compelled to recognize its presence and seek to understand, to the utmost, its significance to us. Those who look only upon the evil results that have arisen from the perversion of sex and the abuse of its function, betray their lack of reasoning power when they say that the world would have been immeasurably better off had there been but one sex and that one in and of itself had been capable of continuing the species. To me such criticism is puerile and senseless. As at present constituted, the human race depends for its perpetuation upon the sex function, and happy is that race or nation that rises to a right appreciation of the possibilities of sane and healthy parenthood.

Man and woman, however, are necessary to each other in order that they may each live a rounded life from the cradle to the grave. A man-child needs the tender care of the mother before, during and after childbirth, through the helpless period of childhood and as the guide and director not only of his first feeble steps of body but also of the mind. As he grows older he needs the sweet devotion and ministry of sisterhood; the drawing out of the chivalries of boyhood and the stimulus to increased endeavor as the result of the influence of his school-girl friends. When he enters manhood it is well that he should know the thrilling joyousness and tremendously developing force of "love's first awakening," and then the real beginning of the possibilities of mature life when, in the intimate relationship of marriage, with parenthood before him, he and the woman of his choice become one, and enter upon what alone is the normal, complete life of the human being.

What is true of the man is equally true of the woman. She needs the strength and affection of fatherhood after her mother has given her birth. As she grows older her brothers call upon her in ways that develop her both physically and mentally and she is as amenable and susceptible to the chivalric attention of her little schoolmates as they are to her coy, though unaffected, pleasure at their advances. She should have frank enjoyment in her boy friends, and look upon life with an entirely new outlook when love first dawns upon her. She finds, too, that life has only fully begun in its real entirety when, married to the man of her affection and esteem, she enters upon the building of a home.

There are qualities that we call essentially masculine and those we call essentially feminine. Yet the complete manhood is that which comprises them all, as is also the complete womanhood.

Marriage is and doubtless always will be a matter of individual will and pleasure. This fact can never be overlooked, but its recognition does not absolve the parent from his duty to train his boy, that it is his bounden duty to himself, as well as to his country, to marry as early as is reasonable the girl of his choice and begin with sanity and forethought the rearing of his family, be it small or large. He should be taught that, properly educated and trained by him, such a family will be, by far, his chief contribution to the benefit of his country. The man and woman who breed a family of healthy, vigorous, virile, useful, mentally alert sons and daughters of noble character, make a greater contribution to the good of the State than if they made a great fortune, built a library in every town in the Union, established a university in every State or bought fifty cardinals' overcoats for a private or public museum. Girls also should have this idea inculcated into their minds with sane and sober seriousness. It is not a matter to jest and joke about. Marriage is a serious proposition both for the man and woman immediately concerned, and for the children that ought to be the fruit of their union, and that parent is no friend to either his son or daughter who does not fully present all the duties and responsibilities of married life to them, before they are called upon to assume them.

Another weighty consideration should not be forgotten. Too many young men and women enter marriage with the idea of the *advantages* they are going to gain. Here, again, is a fatal mistake. True marriage, both for man and woman, should be a state of joyous, happy, loving service, a free and cordial *giving* rather than a *receiving*. If one marries simply to get, he will get only what he marries for, and unless marriage teaches him wisdom he will be sadly disappointed in what he receives. Like Dead Sea fruit it will turn to ashes on his lips. If, on the other hand, he marries to *give,* he will receive back all he gives and immeasurably more. This is a practical law of life that never fails, and wise indeed is that young couple that has wisdom and forethought to appreciate it.

Still one more consideration before I leave this phase of the subject. There is a lot of sentimental nonsense current about how much the bride gives to her husband. There is neither truth nor sense in this one-sided statement. True marriage is a mental and spiritual partnership as well as a physical and worldly one and the true husband gives as much as he takes and should receive only as much as he gives. In other words, marriage gives the opportunity for the necessary completion of the life of each partner and neither side has any advantage or disadvantage over the other. A man should bring a clean and chaste body and mind, with a pure soul to his wife, just as much as a wife should bring her chastity and virtue to him. Any other standard is wrong, because one-sided and unnatural, and when a man and woman enter the married relationship the man should have just as much virgin purity to give as has the woman.

PHYSIOLOGICAL LAWS OF MARRIAGE.—Marital unhappiness is a condition so unfortunately common at the present time that, together with the divorce problem, it is the chief subject of discussion in the magazine page of all daily newspapers and in the large magazine sections of their Sunday editions, to say nothing of the endless number of books and magazine articles devoted to it. But while these hosts of writers pretend to be trying to solve the problem, wandering and floundering about on all sides of it, all of them, as though by common agreement, seem to avoid the crucial center of the problem, the fundamental and vital fact which is the basis of marriage, and upon which chiefly depends its happiness or unhappiness. It is, in short, the sex life of the pair which, if subject to abuse and excess, is bound to wreck the all too venturesome but unguided voyagers upon the sea of matrimony.

Guided by right principles along the proper course across this sea of matrimony, the nuptial bark will find itself upon smooth waters and under clear skies. But when unpiloted, and drifting through the ignorance of the two passengers, at the mercy of frequent storms of unrestrained passion, it is sure to find itself on dark and turbulent waters, far out of the normal course, and probably dashed to pieces in the end upon the submerged rocks.

While seemingly mismated couples pass through interminable quarrels and fill their hearts with hatred of each other, the whole trouble lies in most cases in the loss of those natural instincts which normally serve as a guide in the marital relations, or the perversion of those instincts. The average conventional marriage represents an unnatural state of affairs in which the ignorant husband seems to believe that the marriage certificate gives him all the privileges of unbridled license, while the uninformed wife has been so impressed with the theory or tradition about her "marital duties" that she ignores her own protective instincts. When the average man starts to talk about sex immorality, he usually refers to immorality outside of marriage, forgetting that there may be just as much immorality, just as much excess and perversion of the sex function, just as much violation of natural law, within the bonds of wedlock as outside. There is no getting away from the fact that many marriages are simply a form of legalized prostitution, in which the woman who has married without love, or who, having loved, has lost that love or had it turned to hate, merely sells herself for the home and support that she receives. But apart from such sordid instances, there are innumerable other cases in which the pair are properly mated and married through love, in which sexual immorality runs rife. As Bernard Shaw once said, in a cynical mood, "Marriage is popular because it combines the maximum of temptation with the maximum of opportunity."

Truly this state of affairs is all unnatural and abnormal. Excess of this kind must inevitably mean the death of love, and often before the honeymoon is concluded. And thereafter, no matter how well mated they may have been, and really still are, they think themselves unsuited to each other and spend their time in the petty strife which cheapens and degrades the atmosphere of the home which might and should be happy. Excesses bring satiety and disgust, and before they know it the sweet attraction which had drawn them together has turned to a revulsion of feeling as strong as the attraction had been. They begin to live their lives on the physical plane entirely, and from that time on, whenever the husband has any feeling for the other at all, it is of the purely sensual nature.

And what is the remedy? If we wish to ascertain the true physiological laws of sex we must turn to creatures that have not been subject to the blighting and deteriorating influences of civilization. These we find only among the lower animals, not those which have been domesticated by man and thus perverted also, but among those monogamous varieties found in the wilds. We find that the instinct of the female lion or tiger absolutely dictates the time when she may be approached by the male of the species, and this is only at the particular period when she is in a condition to conceive. This period, as a rule, lasts for only a few days at a time, and at no other time will any interference by the male be tolerated for an instant. The basic purpose of the sex instinct is procreation, and the animals live a normal decent life in this respect. After becoming pregnant the female animal will fight with a fury unequaled to prevent any further approach from the male.

How far, how very far, have we wandered from this ideal plan of life, this wholesome and vitality conserving principle. This is the true sexual law which should be applied in human life. Every normal, healthy woman has this same protective instinct, and should not permit it to be perverted. She should be the supreme dictator in all these matters, and should have it understood before marriage, in a frank and open discussion of the matter, that she is to possess this rightful power of absolute self-ownership, that she, who mothers the race, must not be made the mere carnal slave of the other, even though she loves him.

There is only a part of each month when the sex impulse in woman is active, and that is only at the time when she is almost sure to become pregnant, or in other words, the few days immediately following menstruation, or just before. While it is true that individuals vary greatly in this respect, yet it stands as a general principle that relations are usually undesirable at other times, so far as the guiding feminine instinct is concerned. At least a measure of self-control and temperance, an adhering to this physiological law as far as possible, is necessary to the welfare and the continued happiness and health of both husband and wife. Remember that nothing will so quickly sap the vitality and undermine the health as excesses in this direction.

Separate Beds.—The time honored custom of a single marriage bed is one great factor antagonistic to a normal married life. It is an unhygienic and thoroughly unnatural arrangement, and wherever possible I would certainly suggest the advisability of occupying separate beds from the very beginning. In many cases it will even be better to occupy separate rooms, each maintaining that element of privacy that is so conducive to mutual respect, and to self-respect, but which is usually lost after marriage. It may seem difficult to live up to the principles which we are teaching, and it may be necessary to fight long and hard for the necessary self-mastery, but the plan of separate beds will help in this, and only strengthen the attraction between the pair.

In short, the married couple should strive as nearly as possible to return to the delightful conditions of courtship, the period which in the ordinary case is enjoyed as nothing in their later married lives can be enjoyed, except perhaps the joys of motherhood and fatherhood with a healthy, growing baby in the house. But the mutual relations of the couple, in themselves, in most cases never again approach the charm and fascination of that preliminary term. Sweet, romantic courtship! How the tender memories of those happy days linger fresh in the aching hearts of countless disappointed, disillusioned wives! And yet the pleasures of courtship and the sweet romantic attachment between the two may be continued all through life by merely following out the principles which we are teaching here, by putting into effect again the conditions which prevailed at that time, making the wife once more and continuously the queenly mistress of herself and all that passes between them, and the husband the ardent suitor as of yore.

And why not? Why should two who seemed the whole world to each other and more, before their marriage, experience such estrangement that they in time actually detest each other. They are the same individuals who once thought themselves inseparable, and under right conditions they will continue to think themselves so, and to experience the attraction between each other which was and is irresistible.

Compatibility.—Much is said in these days about incompatibility of temperament, but I venture to suggest that in the majority of cases the apparent incompatibility is the outgrowth of just such abnormal conditions as I have referred to. Excesses and abuses have made the two contracting parties to the marriage simply sick of each other, satiated, disgusted, antagonistic, and, therefore, seemingly "incompatible in temperament." Each thinks himself or herself "misunderstood" by the other. There is no more reason why they should be incompatible now than before marriage, and the world knows that they were congenial enough at that time. If compatible then, why not afterwards, if the conditions are right? I believe that in at least ninety-five per cent. of all cases, perhaps ninety-nine per cent., the supposedly insurmountable incompatibility of temperament can be cured by a revolutionary change to the methods of living which I am advocating. And, furthermore, I believe that the great majority of divorces can be avoided if the parties thereto were willing, able, or perhaps I should say, sufficiently informed in these matters to live normal lives, observing natural laws in their relations with each other and bringing into their homes the family of children which would still more closely cement the bond of union between them.

THE QUESTION OF CONTINENCE.—In answer to the question as to what constitutes true marital chastity, there are two theories presented, both of which have pure and conscientious advocates.

These are: First, that a temperate indulgence of the sexual appetite is not only a legitimate, pure and natural exercise of the function, but has the effect of tightening the bonds of affection that already exist between the couple that are happily married.

The second theory on the problem is that science demands absolute continence except for the procreation of the race.

Let us discuss the second of these propositions first. Those who seek the ideal may be able to live this life of marital continence, not only without injury from the suppression of their sexual desires, but perhaps with positive benefit to themselves and their offspring.

Certainly no one can doubt this for a moment and know the many men of open and blameless lives in the Catholic Church who from their youth up were devoted to sexual continence, and he would be a scoundrel in both thought and words who dared to cast an aspersion upon the thousands of noble women whom circumstances have prevented from marrying, but who have been the lifelong companions and caretakers of invalid parents, younger brothers and sisters, and even distant relations, whose afflictions, dependencies and helplessness have appealed to the maternal and protective instincts of these devoted, unselfish and sweet-souled women. Nor can we forget the large army of noble Sisters of Charity and other nuns, whose lives have been devoted to the sick and helpless of all ages and whose vocation has required of them a life of perpetual continence.

The counter-statement that there have been a few renegade priests and nuns in every generation proves nothing against the great mass of conscientious devotees, no matter how mistaken we may imagine them to have been in rendering themselves subject to such vows.

We now come to a consideration of the first proposition, namely, that a temperate indulgence of the sexual appetite is not only a legitimate, pure and natural exercise of the function, but has the effect of tightening the bonds of affection that already exist between the couple that are happily married. Dr. T. L. Nicholas, whose "Esoteric Anthropology" has had a large circulation throughout the civilized world and is regarded almost as a text-book by many noble men and women, has the following to say on this subject:

"In animals where there is but one gestation in a year, there is usually but one period of heat; but while the periods of gestation and lactation extend over nearly two years in the human female, when these are at an end, she regularly, every month, throws off an ovum, marked by the menstrual discharge; and, of course, is every month prepared to receive the sexual embrace. It seems to be fairly inferable, that once a month is the natural period in which a woman requires sexual union; and it may be doubted whether any greater frequency is not a violation of natural law. At this period, however, when in a healthy condition, she is full of ardor, has a great capacity for enjoyment, and is seldom satisfied with a single sexual act. The period of excitement, moreover, may last for several days, or all the time the ovum is passing from the ovary to the uterus. Once there, it should not be displaced by any amative excitement, whose tendency from that time forward, is to produce abortion."

In regard to man, however, he has the following to say:

"Man differs very materially from woman in the exercise of the procreative function. From the age of puberty, the action of the testes is uninterrupted. I can find no hint of periodicity, unless it has been created by habit. Whatever restraints he may have, must be moral, for they are not physical like woman's. And while, in woman, the production of ova ceases at from forty-five to fifty-five, the activity of the organs in man continues, and he is capable of generating until a late period of life. Man has no function corresponding in periodicity to menstruation; no diversions of the vital forces engaged in this function, like those of pregnancy and lactation. But in this function man must be governed by the requirements of natural law which is the basis of morality. And the law is that *he should respond to the feminine requirement and never go beyond it.* This is the law throughout the animal creation and to it man is no exception. Woman was not made to be a harlot for man, the instrument of his pleasures in marriage or out of it."

The presence of the seminal fluid in the vesicles reacts upon the brain, and the mind glows with voluptuous ideas. Under their influence men are gallant, kind, attentive and loving to women; ever seeking their favors, ever pressing their suit. It is the part of woman to accept or repulse; to grant or refuse. It is her right to reign a passional queen; to say, "thus far shalt thou come, and no farther." It is for her nature to decide whom she will admit to her embraces, and when; and there is no despotism upon this earth like that which subjects a woman to the embraces of a man she does not love; or to receive the embraces of a man she does love when her nature does not require them, and when she cannot partake of the sexual embrace without injury to herself and danger to her offspring. If a woman has any right in the world, it is the right to herself; and if there is anything in this world she has a right to decide, it is who shall be the father of her children. She has an equal right to decide whether she shall have children, and to choose the time for having them.

"The expressions of love antecedent to, and connected with its ultimation, are varied and beautiful, involving the whole being. Love gives light and a trembling suffusion to the eye, a soft, tremulous tenderness to the voice, a sweet sadness to the demeanor, or a deep joyousness; a certain warmth and voluptuousness preside over the movements of the body; blushes come often to the cheeks, and the eyes are cast down in consciousness; the heart swells, and beats tumultuously; there is a radiant idealization of the beloved object, who seems to the enamored eyes clothed with every perfection; an exquisite delight pervades the sense of feeling; every touch, even of the garments, gives pleasure to those who love; hands are clasped with a thrill of delight; lips meet in rapturous kisses; and the same instinctive attraction which brings together the two sexes of the lower animals, acts not less powerfully in man; but should act always under the influence of tender sentiment, refined feeling, reason and conscience, for the greatest good as well as the greatest happiness."

Concerning the celibate life, it may be said that it is not in accord with the dictates of natural instincts to prolong celibacy to twenty or thirty years after maturity. Although harm may not result from continence, it is perhaps true that such a course is not likely to preserve virility. Also, it is true that a failure to exercise these powers may possibly result in a lack of general physical development and virility in life's later years. A natural life is therefore the best.

Naturally this question of continence is a subject upon which, as on many others, the "doctors disagree." And yet it must be said that among physicians the preponderance of opinion is to the effect that strict continence is detrimental, that it is conducive to a lessening of potency and sometimes to impotence. Many physicians are convinced on this point. If they are right, however, the question still arises as to why their contention is true.

If strict continence may sometimes be harmful, is it because of true continence in the sense of chastity, that is to say, chastity not merely in action, but in mind and thought? Or is it in many cases because of the practice or policy of attempting to defeat Nature by continence in respect to conduct while observing anything but chastity in respect to thinking?

Herein is one of the greatest of all evils to be found in connection with the sexual life. It grows out of an unwholesome and morbid interest in sex matters and the continuous stimulation of that interest. It may be said to be a case of "playing with fire," trying to see how close one may come to it without getting burnt. It consists in a policy of stimulating both imagination and desire, and at the same time preventing the complete physiological satisfaction of the desire. If the passions are aroused there is a physiological requirement in the way of their gratification. Even if this gratification is not always moral, at least it is always physiological, and if the natural culmination of this force is prevented, it is only with detriment from the physiological standpoint, and especially from a nervous standpoint. In this respect women probably suffer more frequently, this being especially true of unsatisfactorily mated married women. Thousands of nervous, emotionally unsatisfied women could testify upon this point. They could, if they wished, tell harrowing tales of sleepless nights, of nervous agony, of a form of torture from which there has seemed to be no relief, no rest.

The results are not only of a nervous character. They are equally pronounced in their directly physical and organic consequences. Prolonged and repeated congestion of the parts concerned makes for weakness and abnormality. Among women this form of psychic self-abuse makes for a form of discharge known as leucorrhea, to aching ovaries and sometimes to serious inflammation. In the other sex this congestion is conducive to weakened and enlarged veins, or more specifically, to varicocele, to swollen and aching glands, and particularly to enlargement or inflammation of the prostate, along with disturbances of function in various degrees.

Of course the solution of this problem in the case of the unmarried is both plain and simple. It merely calls for a condition of mental chastity. Apart from the natural associations of normal married life, the only healthy rule is that one should conduct himself or herself in such a way that the sex instinct is not awakened. One should avoid the associations which call into activity the slumbering forces. Let them slumber, and they will do no harm.

And so it may very well be that the chief reason why continence has been found to be harmful in many cases is to be found either wholly or in part in this condition. Any reference to the suppression of sex may be taken as having two possible meanings. There is, first, the suppression of desire, that is to say, maintaining an unawakened sex instinct through avoiding exciting circumstances, associations and influences, which is a simple and probably harmless matter. And on the other hand, there is the suppression of aroused sex passion, which is a very difficult thing and also from a health standpoint a harmful thing.

The bachelor in remaining unmarried presumably elects to live a sexless life. If he really does so in mind and thought as well as in conduct, he will probably suffer very little in respect to the weakening of his potency. On the contrary, he will very likely experience an abundance of energy, the sex-force being diverted into other channels of thought or work. But if a married man, living in close association with the woman for whom he feels a strong and warm affection, and whose possession he naturally desires within the limits of the healthy association suggested in these pages, and yet through some theory of disciplining his spirit or for any other reasons determines that both he and his wife shall live a life of rigid continence, then it is only to be expected as a result of this practice that he will suffer in respect to his nervous forces, his mental energy, his magnetic qualities and his general vigor.

Of course this question as to the possible harm accomplished through strict continence in conjunction with true chastity of mind and thought is the very point in dispute among physicians. Perhaps this state of complete mental chastity is not common. And yet one may suppose the case of an idealist, perhaps a religious worker, who has entirely suppressed the sex instinct. The claim is made by many physicians that in this way such a person will in time produce more or less atrophy of the reproductive organs, or loss of physiological or functional vigor in this respect. Whether this result will develop in all cases, or to a varying degree in different cases, remains unsolved. Unquestionably there is a strong basis for the recommendation of fairly early marriage with the assumed advantages of a normal sex life.

A man who follows his natural instincts and becomes a husband and a father in his twenties or thirties will expand mentally and physically and will doubtless as a result be stronger, healthier, more ambitious and more capable than if he had stifled his nature and remained a celibate throughout life.

Whatever view we may take of the various theories in regard to these matters, it should be said that under no circumstances must the sexual act be undertaken if one is under the influence of physical weakness or fatigue or unusual mental strain, nor when it is found that languor or depression follow it. Consumptives and those suffering from other diseases characterized by reduced vitality should live strictly continent lives.

It is just as distinctly harmful for a married couple to attempt to lead a continent life while indulging in caressing, kissing, and conduct liable to arouse sexual excitement, as it is for engaged couples to invite amative excitement.

It is not well for a married couple to live together and attempt to abstain from all sex relations during the period that it is natural for the female to indulge in such relations. In other words, for the ordinary, well-mated married couple I believe that a policy of temperance rather than an attempt at complete abstinence is to be recommended.

Continence in married life should be maintained especially:

1. During pregnancy.

2. At those times during each month not included in the periods before and after menstruation when the natural instinct of the female will permit intimate relations of sex.

3. During the first few months while the child is being nursed.

It cannot be too strongly emphasized that the growing youth and unmarried man should hold himself to as high a standard of sexual cleanness as he expects from the woman who is to be his bride.

Altogether, taking a practical view of the subject, it would appear that a continent life is generally advantageous up to the age of twenty-five years. After that it is without doubt more satisfactory to marry and live a normal life, observing the demands of temperance and the considerations that I have discussed in regard to these relations.

EARLY MARRIAGES.—To a right understanding of both the question and the answer one must clearly define the word "early." Science, reason and common sense must determine what the term means. The power of procreation does not usually exist in the male before the age of fourteen or sixteen years, and it is not likely that spermatozoa are produced until that period, although a fluid is secreted by the germ glands or testes. In other words the germ-cells do not "mature" or ripen until at that age. When boys reach the age of puberty, however, a marked change is evident. The reproductive organs develop, the larynx enlarges and the voice becomes deep and full. There is also an emotional awakening accompanied by more or less marked mental changes. The procreative power in men may sometimes endure up to fairly advanced old age, though generally not beyond sixty or sixty-five years.

The period of puberty in the female occurs usually between the thirteenth and sixteenth years, in warmer climates somewhat earlier than in cold. The general mental and bodily habits of the individual have also considerable influence upon the time of its occurrence. Girls brought up in the midst of luxury, exciting influences and sensual indulgences, undergo this change earlier than those reared in conditions of hardihood and self-denial.

Therefore, it would naturally be regarded as insanity to say that children of twelve years should marry. Yet there are those who believe that marriage is not only possible but advisable directly after the age of puberty. Science teaches us that this idea is as insane as that children should marry *before* the age of puberty. Neither boy nor girl attains physical maturity until the bones, muscles, nervous structure, and, indeed the whole body, have reached full growth. Parenthood before physical maturity is attained is a crime both against the children and the race. Science teaches that, in a temperate climate, this age is from twenty-two to twenty-four in women and five to six years later in men. Though one may gain full height several years prior to this time, observation teaches that if the right kind of life is lived both boys and girls broaden out and their bodies continue to develop up to the time I have stated. When such development has fully taken place the body is then ready for marriage—not before. By an early marriage, therefore, I mean a marriage that takes place as soon as the body is physically able for it. That kind of marriage I most heartily and sincerely believe in, and am convinced that the nearer people come to it the happier their lives are likely to be and the healthier and more vigorous their children will be.

There is a physiological advantage of early marriage, too, that concerns childbirth. While the bones of the prospective mother have fully developed, the younger they are the more flexible and elastic they are, and thus better fitted to conform to the expulsive efforts of childbirth. But there are other reasons seldom considered by writers on this subject which I recognize as of the utmost importance. It is well known that there is an ardor in the affection of a young couple that age necessarily tones down. Not that the real affection grows less with age—for in a real marriage it always increases—but that in the full flush of early manhood and womanhood there is a passion, an intensity, an exuberance that belongs only to the period of youth. Connected with this is the equally potent sexual urge of youth, specially if the man as well as the woman has lived a pure life—as should always be the case.

The result of this ardent affection, should the woman become pregnant under its influence, is bound to be the production not only of a child of hearty, robust, vigorous temperament both physical and mental, but a child of happiness and joy.

By all means marry young, but not a day sooner than you are physically fitted for the duties and responsibilities. Anticipate children with joy and pleasure and look forward to as large a family as it is reasonable for you to have. Intelligently breed your children, however, with a definite purpose of quality, not quantity. Welcome them when they come and prove your welcome by giving them the best body, mind and character you are capable of. Anticipate with joy their growing up around you, so that as your years decline you will be able to see them happily married and settled, possibly with children of their own, all of them ministering to make your last years your happiest and best ones.

Children Desirable.—The epidemic of "race suicide" sweeping over the civilized world at the present time is one of the most alarming of all modern social phenomena, causing consternation among governments and perplexity among students of sociology. It is, however, really a symptom of the physical and moral deterioration of perhaps the larger part of the population of civilized countries. Men and women are losing the true parental instinct which under normal conditions will lead them to desire at least moderately sized families. Perfect health and normal instincts would not permit the voluntary sterility which we find each year in an increasingly greater number of homes.

I certainly do not advocate indiscriminate and unlimited parenthood among those not fit to become parents, nor under conditions which do not offer satisfactory opportunities for the development of the children. But the lack of children is not found among these so much as among those who are well to do, the very ones who can best provide for the physical, mental and moral welfare of their progeny.

In the first place, no home is complete without children and family life. It was for the sake of children that home life originated. It is in the children that we find the object of the union of the sexes. The childless home, therefore, is an anomaly, a perversion, an abnormality. The home is the foundation upon which rests the integrity of the nation, and yet as we look about us everywhere, far and wide, we see countless numbers of modern homes that are not homes, homes that are pretenses, makeshifts, places in which to eat and sleep, to mistrust and suspect. Such homes do not endure, and the brand of national life made up by homes like this cannot endure.

But for the women there is another intimately personal aspect of the matter. They fear the crisis of childbirth, the danger of which can be avoided by adherence to a normal physical culture life. But probably most of all, in the majority of instances, they "wish to retain their youth and their figures." Just here is the one tragic mistake through which they only succeed in defeating their own small, selfish purpose, as well as their racial destiny.

The average woman seems to be saturated with the unwholesome notion that motherhood means the loss of her figure, her health and her youth, blaming upon this natural function the inevitable results of unhygienic and improper modes of living. She believes that maternity will mean the sacrifice of herself for her child, and this she flatly refuses. *Motherhood is not a sacrifice; it is a fulfillment.* No woman is really her complete self until she has become a mother; she cannot until then know the fullness of life, all that life means for her, nor understand the forces of her own nature. And far from losing her health and her youth through motherhood, the hard physical facts of the case are that she thereby preserves her youth and her health. In innumerable cases, even without any knowledge or practice of physical culture measures, the health of a woman has improved after becoming a mother so that her friends would hardly know her. And as for youth, we need only recall that more women than men reach an extreme old age, and that practically all of these very old women have been mothers, not usually once or twice, but generally mothers of very large families. So if you seek health and prolonged youth, the very best policy is to live a normal life in this respect and fulfill the maternal function.

The theory that a woman loses her figure through it is absurd, as is evidenced by the experiences of many physical culture women who have had a generous number of children and preserved their beauty unaltered. And everywhere there is evidence that sterility is no guarantee of the retention of physical comeliness. How many times have we not, each one of us, observed the lack of figure and of beauty in "bachelor maidens," and in married women who have avoided children? The women themselves know only too well the sagging, drooping state of their breasts, even though these have never served their intended purpose, and the flaccid, protruding aspect of their abdomens, when uncorseted. Motherhood is not to blame in such cases surely, and when those who actually have been mothers display the same deficiencies, it is not because of motherhood, but because of the other degenerate conditions which have robbed them of their physical soundness and vigor, whether married or not.

Children are desirable, therefore, in all cases where the parents are sound and normal, for the sake of the continued youth, beauty and health of the mother, and for the happiness and success of the home itself.

Avoiding Childbirth.—One of the subjects uppermost in the mind of the average modern woman upon contracting marriage is the question of the possibility or method of avoiding children except when she chooses to have them. I have already spoken of the desirability of children in the home and the importance of motherhood as a factor in the personal complete development of the individual, as well as a means of attaining that physical maturity which makes for long life and continued youth. Sterility is not to be desired by any normal woman. But at the same time, it is conceivable that a woman may desire to place some limit upon the size of her family, short of the extreme number of children which marks the extent of her physical capability. And furthermore, she may wisely desire to exercise her own judgment as to the time in which, and the circumstances under which she will bring children into the world.

The dissemination of knowledge regarding the prevention of conception is absolutely forbidden by law, and under extremely heavy penalties. This law has been vigorously condemned by all earnest students and competent writers upon the subject, so far as I have been able to learn. It is self-evident that enforced motherhood is not right, under any circumstances. And there are so many circumstances under which defective children may be produced, as indicated in the preceding chapter, that the possibility of avoiding them is an absolute necessity. Parenthood in some instances is nothing short of criminal. Children should never be conceived, for instance, by alcoholic parents. They should not be begotten except when both parents are in a perfect state of health, filled with vitality and nervous vigor. And there are other conditions of a mental, moral, physical and economic nature, too numerous to mention here, which should be considered.

There is much confusion of thought on this subject of birth control. Many who oppose it apparently assume that the prevention of conception is practically the same thing as abortion. Manifestly, there is all the difference in the world between the two. Indeed, advocates of birth control claim that a knowledge of methods of preventing conception will largely do away with the practice of abortion.

There is a common objection to the effect that birth control methods are not always reliable. While this is true, yet the fact remains that they are ninety-five per cent or more effective. And, of course, even this means relief from the burden of enforced and excessive maternity. It is also true that some methods commonly employed may react injuriously. But it is also held that this fact makes it all the more necessary that women should not be kept in ignorance on this matter. If they were properly informed injurious methods would not be resorted to. Methods recommended in subdued whispers from neighborly back doors are not always safe or desirable.

Criminal Abortion.—While civilized women are greatly shocked, or pretend to be shocked, at the custom attributed to certain savage tribes of killing some of their infants, defective offspring only, in some cases, female offspring chiefly, in other quarters, yet the savages might be equally shocked and alarmed if they knew of the widespread practice of prenatal child murder among the supposedly refined women of our own localities. This crime against the unborn and against self is committed everywhere in civilized society, most frequently among the rich, but in later times quite often also among the poor. It is pointed to by some writers as one deplorable result of the legislation which prohibits information regarding the prevention of conception, but while this is only one interesting phase of the subject, the real cause of this terrible practice lies far deeper, namely, in the perversion of natural instinct which leads a woman to desire to avoid children even after she is already a mother. The fact that the child is not yet born does not make her any the less its mother. The fact that it is not yet fully developed does not make it any the less a human being. Many women endeavor to excuse themselves upon the theory that the child, only forming, is not yet a child, but a glance at the illustrations in this volume, showing the development of the fetus, will show very clearly that the little one is alive from the very beginning, and even at the age of one month after conception is rapidly developing into the form and character of a child. Let women look about them at splendid sons and daughters grown, or at brothers and sisters whom they love, and then realize that it is actually such as these whom they are destroying. Murder is none the less murder because the victim is unborn and unseen.

Furthermore, there is nothing so destructive to the organism of the individual as the shock to the system involved in this outrageous and unnatural act. In many cases it produces the result of making it impossible for the perpetrator of the crime ever again to have children, when she may really want them. But in all cases it is disastrous to health, brings on premature age, lines and wrinkles the face, coarsens the moral nature and robs one of her womanhood. If often takes years to recuperate and regain anything like normal health. The woman who would be healthy and happy in her married life, therefore, should no more think of commiting this crime than of cutting the throats of her babies already born, or of murder in any other circumstances.

For the proper treatment of abortion or miscarriage induced by accident or any other cause, see Volume IV.

PRUDERY.—If there is one thing in this wide and beautiful world more loathsome and detestable than anything, more to be despised and hated, more to be fought with all the strength and power that we possess, it is prurient prudery. Listed among the prominent causes of disease in the second and other of these volumes, I have presented a general definition of the word, to which the reader is referred. But because it is so pertinent to all that we have to treat of in the present volume, it is necessary here again to emphasize the terrible nature of this gigantic evil. For the quintessence of prudery is pruriency. Hypocritically flaunting before the world the pretense of modesty and decency, the thoroughly prudish mind is in truth utterly incapable of harboring a single element of either decency or true modesty. For deep down beneath the hideous pretense of morality, we know that we would find the very soul of nastiness and immodesty, which it is the one main purpose of the prude to hide.

And indeed, how else can such an attitude toward life arise except through pruriency—except through the nasty-mindedness which places such a vulgar and degrading interpretation upon life? It is not that there is anything in life that is obscene or impure, but only that the contemplating mind regards it as being so, regards it as a matter of which to be ashamed, and therefore seeks to hide it. The impurity is in the mind, not in the thing. The human body is the Temple of God. Every part of it is sacred to its own proper uses, and the function by and through which human life is perpetuated, the most wonderful thing in the world, should of all others be regarded with the utmost reverence and respect. Why, indeed, should the reproduction of human life be regarded as an indecent process, when we do not regard it as such in the case of plants, and scarcely so in the case of birds and the lower animals? The flowers, representing the channel through which reproduction of the plants that bear them is accomplished, are particularly beloved of mankind, and thought to be among the sweetest, purest things on earth. And with ourselves, indeed, the most highly developed organisms on the earth, the process of procreation is just as pure and holy, and it is only necessary for us to see the thing straight and recognize that it is so.

By ignoring the need for knowledge upon all subjects of this kind, by insisting that ignorance means purity and innocence, this vicious attitude toward life and sex has brought about more dire results than any other single evil in the world, or even any number of them. It has been said that "Where ignorance is bliss, 'tis folly to be wise," but in this case ignorance means not bliss, but literal hell on earth. Prudery has sent more victims to an early grave than war, famine, pestilence and strong drink combined. It has wrecked more lives of young men and maidens than have been wrecked by all the storms of

These four daughters of Bernarr Macfadden, Berenice, Beverly, Beulah and Braunda, ranged from one to seven years of age at the time of taking this portrait.

the ocean. It has caused more marital breaks and ruined the happiness of more husbands and wives than death itself. Yet still it stalks through the land, parading the white garments of innocence while its hideous form is one mass of loathsome and evil corruption.

Sifting the thing down to its origin, it would seem that prudery is a reflection, not only of the character of the prude himself, but to a large extent of his conduct as well, for while his character will determine his conduct it is also true that his conduct will influence and build his character. When we find one who regards a certain function as something impure and sinful, may we not assume that it is often because his conduct is this regard has been sinful? One is likely to experience a sense of disgust for himself after getting drunk, and if refined may even entertain some loss of self-respect after over-eating. In the same way, excesses and perversions of the sex function have unquestionably been a large factor in the origin of prudery. We know that the victim of secret vice

Four living testimonials of the effectiveness of physical culture methods in parenthood and child-rearing: the four youngest members of the Bernarr Macfadden household.

shrinks from the society of his fellows and scarcely dares look the other sex in the face. And apart from such as he, it is a fact that can be readily verified that the most licentious and immoral people are invariably the most prudish, the most conspicuous in advertising their pretensions of modesty.

The natural child shows not a trace of this abnormal attitude toward the facts of life, and if properly brought up never will experience or understand the blighting force of prudery. It is only through the insistent early training that the sense of shame may be instilled into his mind, but even this can be quickly erased from it if his conduct is pure and natural. But if he falls into the errors and perversions common to many of those whom he meets on the streets, then it will be much more difficult ever to cleanse his mind entirely of the corruption which it has suffered.

The evil begins in early childhood. As soon as the child is old enough to want to know something about himself he is stuffed with lies. But he very quickly finds out that they are lies, and that his elders are only avoiding his questions. He finds himself confronted with a conspiracy of silence, which serves to thoroughly arouse a curiosity which, if properly satisfied, would have been only casual. The mystery and secrecy thrown around the entire subject, and the continual cry of "Shame, shame!" in regard to his own body, set his mind to working in abnormal channels.

From the stable boy, from vulgar associates on the streets and playground, from foul-mouthed servants, the youngster secures, not the truth, but the nastiest and most hideous conceptions possible. And from this early childhood day on through boyhood and youth, the only references to this subject that are permitted to reach the growing mind are of this nature. His every idea of the sacred function of sex is associated with the smutty jokes and obscene stories which he hears on every hand when out of the company of the other sex. And in many cases, before he has reached his "teens," he has acquired not only the point of view of the stable boy, but his vicious and destructive habits also.

At fifteen months, Bernarr Macfadden's daughter, Beverly, presents convincing proof of the possibilities of applying Physical Culture methods in parenthood and the care of the child.

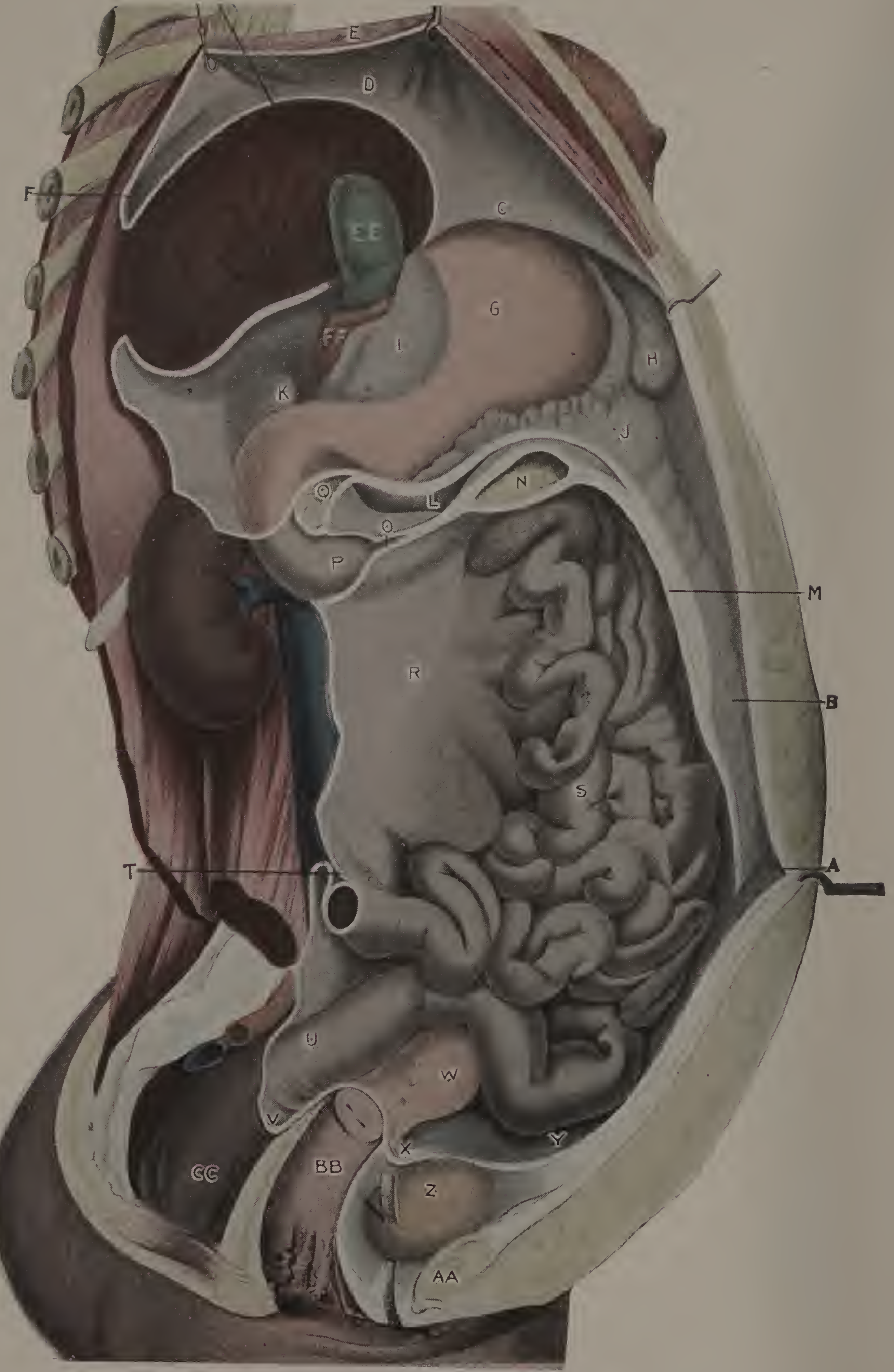
Prudery, more than any other thing, is responsible for the physical, mental and moral degeneracy that we see on all sides of us. Prudery is the direct cause of that wholesale ignorance regarding sex which has worked more or less havoc in the lives of almost every one in civilized society. It has prevented the intelligent study of factors and forces that would make for the improvement of the race. It has led to the vicious habits and through them to the destruction of any number of young people, while others who have survived have gone through life in a weakened, half-dead condition, chronically tired, haggard, miserable wretches.

Prudery is responsible for our millions of unhappy marriages, when we sift the thing down, because it has kept men and women in ignorance of the physiological laws of sex which I have briefly outlined, and strict obedience to which alone can make possible marital happiness. Just think, indeed, of a girl about to be married without knowing one solitary thing about what marriage means. And yet that is the ideal, the beautiful, perfect ideal of the prude.

And finally, prudery is responsible, at the bottom, for both the social evil and its hideous, immeasurable consequences. In New York City alone there are said to be some fifty thousand prostitutes, perhaps twice that many, with hundreds of thousands in the whole United States, all spreading the vilest of diseases broadcast. The men, fools blinded by the force of prudery, then take these diseases into the bosom of their families, often inoculating and sacrificing innocent wives and babies. It is because of prudery and the consequent ignorance that men and boys have accepted the pernicious doctrine of the physical necessity of sex relationship. It is through prudery that they are permitted the debasing associations through which they are certain to contract these diseases. And it is because of prudery that trusting young women lovingly and innocently accept as husbands men who are more dangerous than rattlesnakes, and far less to be respected.

Let me urge you to be frank and fearless with your children in dealing with them upon this subject of sex. Teach them that the body is a beautiful thing, fashioned by the great Creative Intelligence for the use of the highest creatures he has made, and that it is to be reverenced as the temple of the human soul. Teach your growing boys and girls to look upon their bodies, and to enjoy the sight, because of the perfection manifested in their creation. Show them the effects upon this most beautiful structure of incorrect living, of over-eating, licentiousness, indifference to exercise, the use of corsets, tight shoes and unventilated hats. Explain to them that while in the present condition of public morals and thought upon this subject, the body must always be covered in public, it is a hideous and repulsive lie that there is anything about the normal human body that is not pure, sweet and beautiful.

PLATE A



VERTICAL SECTION OF THE FEMALE BODY

A. Wall of abdominal cavity.
B. Greater omentum (fold of Peritoneum).
C. Round ligament of liver.
D. Sickle-shaped (suspensory) ligament of liver.
E. Diaphragm.
F. Coronary ligament of liver.
G. Stomach.
H. Spleen.
I. Lesser Omentum (fold of Peritoneum).
J. Transverse colon.
K. Suprarenal gland
L. Anterior layer of transverse mesocolon (connecting colon with abdominal wall).
M. Greater omentum (fold of Peritoneum).
N. Transverse colon (cross section).
O. Posterior layer of transverse mesocolon.
P. Duodenum.
Q. Pancreas.
R. Mesentery (fold of intestine, connecting intestine with abdominal wall)
S Small intestines
T. Two layers of mesentery.
U. Sigmoid flexure.
V. Pouch of Douglas (recto-uterine fold of Peritoneum).
W. Womb.
X. Vesico-uterine fold of peritoneum.
Y. Vesico-abdominal fold of peritoneum.
Z. Bladder (held by metal tractors).
AA. Symphysis (Pubic junction of bones)
BB. Vagina.
CC. Rectum (outlet not shown)
DD. Urethra.
EE. Gall-bladder.
FF. Gall-duct.

CHAPTER III.

THE FEMALE GENERATIVE SYSTEM.

THE organs of generation in woman consist mainly of two ovaries which may be regarded as the parental germ-glands of the female, and in which the maternal germs, or ova, are secreted; the womb, or uterus, which is the organ of gestation, and which is designed to contain the embryo while it develops and until it is ready to enter upon its term of existence in the external world; the Fallopian tubes, a pair of ducts which connect the ovaries with the womb and serve periodically to carry the ripened ova to the latter; and lastly, the vagina, which serves as the birth canal, and connects the mouth or opening of the womb with the exterior.

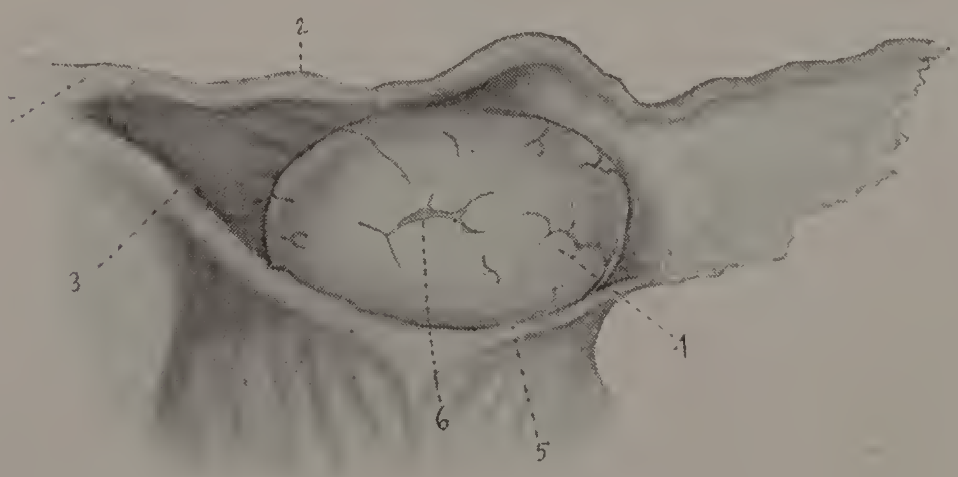
The womb, which, roughly speaking, may be said to be similar to a flattened pear in shape, is situated in the cavity of the pelvis between the bladder and the rectum, being retained in its position by the round and broad ligaments, chiefly the latter. On each side of the womb, and projecting from the back of the broad ligament are the two ovaries, while the Fallopian tubes, running over the upper portion of the broad ligaments, form a loop, as it were, above and around the ovaries.

The ovaries, or germinal glands, are perhaps the most important part of the female generative system, since it is in them that the egg or ovum containing the germ of the new life is developed. The ovaries are analogous in function to the testes of the male. Their size and shape may be best understood by comparing them to an almond about one and a half inches long, three-quarters of an inch in width, and about one-third of an inch thick. They are of a grayish-pink color. Their exact normal position is the subject of some difference of opinion, but we may say that it varies according to the inclination of the uterus.

The outer structure of these glandular bodies is dense and firm, but containing soft fibrous tissue which is abundantly supplied with blood vessels. Embedded in this tissue are numerous vesicles called ovisacs, or Graafian follicles, in which the ova are contained and developed, the only sources from which human life can spring. The fluid contained in the interior of these vesicles is transparent and albuminous. Each follicle contains a single ovum or egg, a tiny spherical body varying in size when matured from one one-hundred and twentieth of an inch in diameter down to sometimes half that size. In each ovary there are several hundred ova, or ovules, as they are sometimes called, in various stages of development.

Every healthy woman, during the possible child-bearing period of her life, matures and discharges an ovum once every twenty-eight days. This vesicle, sometime before the monthly flow, begins to germinate and swell, the ovum, which in its immature state is fixed to the wall of the ovisac or Graafian follicle, now becomes detached and moves near the free surface. Finally it bursts through its covering and springs forth, then passing through the Fallopian tube and into the womb.

The Fallopian tubes, or *oviducts,* two in number, are attached at each side of the upper body or larger end of the womb and extend outward to the ovaries. They are about four inches in length, and their general direction may be said to be outward, backward and downward. They are normally about the size of a slate pencil, the canal through the center being very tiny, and in the end adjacent to the womb being only large enough to admit a small bristle. This canal is a little larger toward its outward extremity, with a trumpet - shaped termination hav-

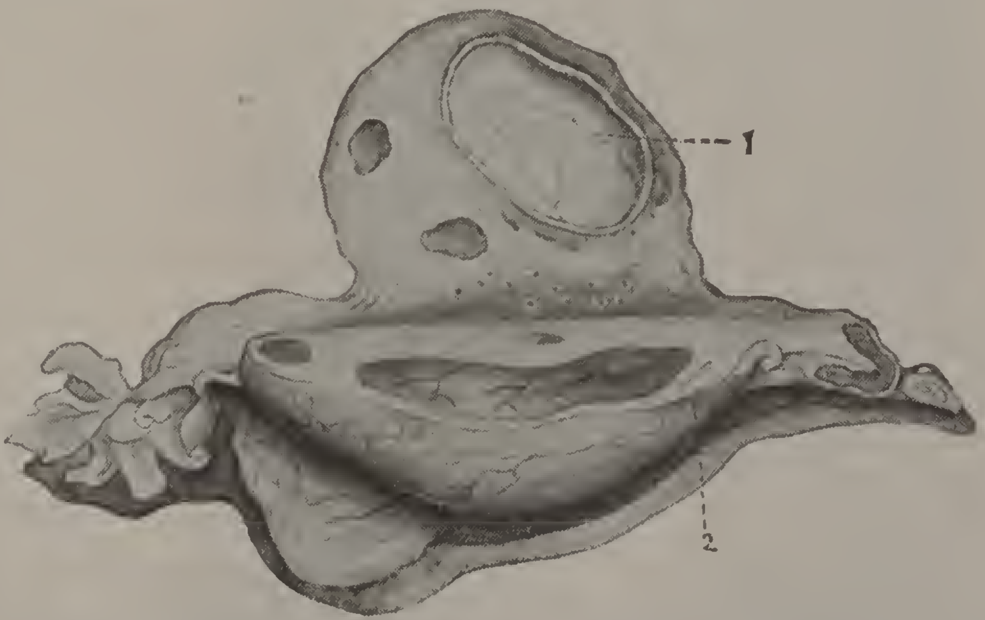


Ovary and Fallopian tube of young woman. The body of the womb is at the extreme left of the illustration. 1, Connection of tube with the womb; 2, Fallopian tube; 3, ovarian ligament, attaching to the womb; 4, ovary; 5, limit of peritoneum; 6, scars of previously ruptured Graafian follicles.

ing a fringe-like formation, termed fimbria. This end of the tube is not directly connected with the ovary, as with the womb at the other end, but during the period of generative excitement the fimbriated or fringed part appears to embrace the ovary. The ovum, when set free from the latter by the rupture of the Graafian follicle, is received by the fimbriated extremity and conveyed to the uterus. It is not known just how long it takes for the ovum to complete its passage through the tube, but it is thought by some authorities to take from three to five days. The object is to bring the ovum within the reach of the fecundating influence, and after it has been fertilized it is attached to the walls of the womb.

The Fallopian tubes are lined with a mucous membrane, being continuous with that of the womb, of which the tubes may be regarded as branches. Therefore, whenever there is inflammation in the cavity of the uterus, it is extremely liable to travel up the tubes, and even to the ovaries. The tubes under such circumstances become swollen and very painful, and because of their exceedingly small calibre, may sometimes become permanently closed. This not uncommonly happens as a result of gonorrheal infection which has extended to these parts, and in such a case the woman becomes permanently sterile.

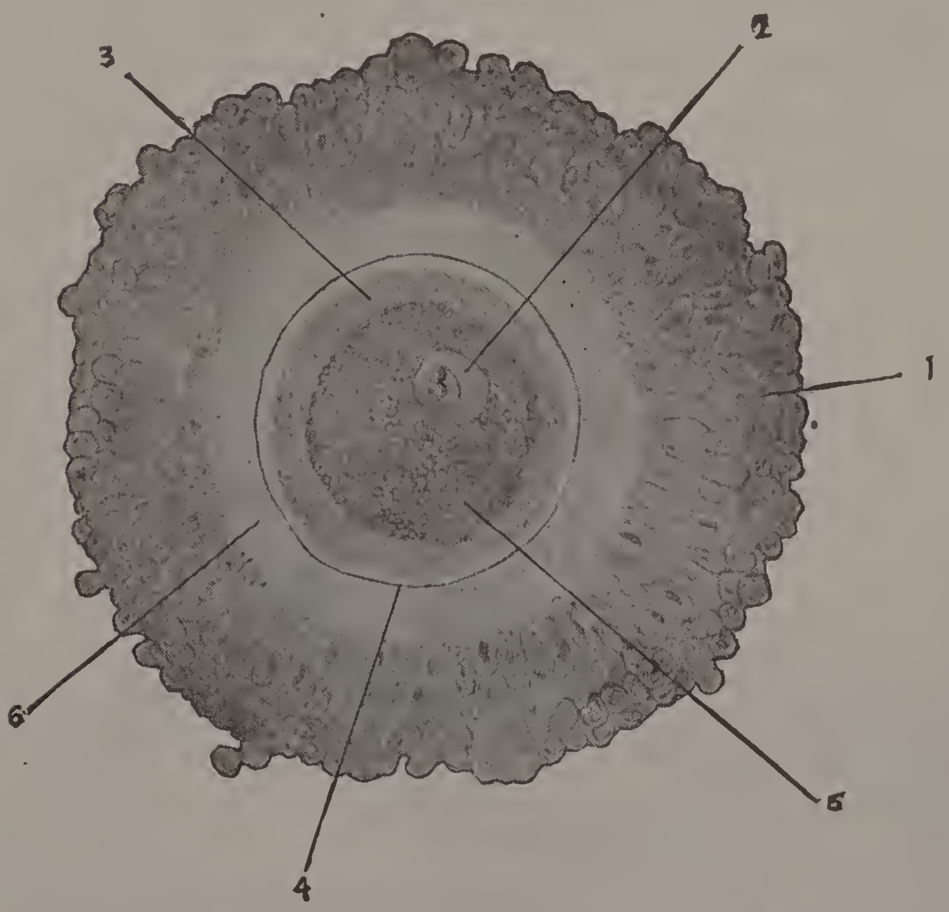
The womb, or uterus, is a hollow, muscular structure, having somewhat the shape of a pear, as we have seen, and being in the virgin about three inches long, two inches broad at the upper part, and perhaps one inch in thickness. It weighs from an ounce to an ounce and a half, though fol-



Sectional view of interior of human ovary, about one week before menstruation (cut open and top placed up at right angles to the other half). 1, A mature Graafian follicle; 2, prominent point where the bursting of the follicle might be expected.

lowing maternity it may be a little larger. The ligaments which hold it in place consist of folds of the peritoneum, the membrane which lines the entire abdominal cavity. There are six ligaments thus provided, two in front, two behind and two at each side. In front, the two anterior ligaments connect the small lower part or neck of the womb with the posterior (rear) surface of the bladder. Behind, the posterior ligaments connect the uterus to the rectum, while at the sides the large lateral or so-called broad ligaments pass to the side walls of the pelvis, forming a partition across the latter, and dividing this cavity into a posterior part containing the rectum, and an anterior part containing the bladder, urethra and vagina. There is also a small utero-ovarian ligament on each side, between the womb and each ovary.

When in its normal position the upper and larger end of the womb is directed upward and forward, with its lower end or apex downward and backward, and projecting into the upper end of the vagina. The organ consists of three parts, so to speak, the *fundus, body* and *cervix,* the fundus really being the upper broad extremity of the body, which slopes down to a slight depression or constriction, known as the isthmus, below which is the small, narrow part known as the cervix, or neck, as it is often called. This cervix is partly in the vagina and contains the *os uteri,* or opening into the latter. The cavity of the womb is small in comparison



Structure of human ovum, in the ovary. 1, Corona radiata, surrounding the ovum; 2, nucleus, containing a nucleolus; 3, protoplasmic mass; 4, perivitelline space; 5, yolk or dentoplasmic mass of fatty and albuminous granulis; 6, zona pellucida, a transparent membrane, within which is the ovum proper.

with the bulk of its muscular walls, and in the upper part is triangular in form, corresponding with the general shape of the body.

The two upper corners of this triangular cavity take the form of funnels leading into the Fallopian tubes, which lead out from the fundus, as we already know. The lower corner leads through a constricted opening and into another small cavity in the cervix or neck. This internal doorway between the cavity of the cervix and of the body is the *os internum*, and the immediate external opening into the vagina is the *os externum,* or mouth of the womb. In a healthy state, this is so well closed as to be just perceptible.

The entire cavity of the organ is lined with mucous membrane, though that of the body differs considerably from that of the cervix. In the latter there are many follicles and glands, globular and sac-like in form, raising the surface in conspicuous ridges, and secreting a transparent but firm and adhesive mucus designed to close up the neck of the womb during gestation and to guard against accidental disturbance or displacement of the egg.

The upper cavity—the womb or uterus proper—has a smooth and rosy-colored mucous membrane, with innumerable minute tubular follicles opening on its free surface. This mucous membrane lining the womb, it should be noted, is continuous with the mucous lining of the vagina, at the one end, and at the other, through that of the Fallopian tubes and its fimbriated extremity, with the peritoneum. It is for this reason that a disease or inflammation of the vagina or womb may readily extend so far as to cause peritonitis.

The womb has three coats, the internal or mucous coat being the mucous membrane which we have just considered, and which adheres closely to the muscular tissue. The middle coat is the muscular coat, forming the great bulk of the organ, the muscular tissue being arranged in three layers. The external or serous coat is formed by that part of the peritoneum surrounding the organ, and covers nearly all of it, excepting the portion of the cervix which projects into the vagina. The neck of the womb, when in a healthy state, is soft, smooth and of a pale rose color. It is elastic and pressure upon it produces no pain. The womb has a remarkable supply of blood vessels, the arteries following a tortuous course and having frequent intercommunication. The veins are large and similar in arrangement. During the enlargement of the womb in pregnancy they are dilated and are termed uterine sinuses or canals. Through this remarkable network of blood-vessels is secured the profuse supply of blood from which, through the placenta and umbilical cord, of which we shall learn more in Chapter V of this volume, the new life is nourished during the middle and later periods of its prenatal existence. During pregnancy the womb naturally enlarges and becomes more vascular, that is to say, more freely supplied with blood-vessels, attaining a weight of from one and a half pounds up to three pounds. After childbirth it contracts in the course of some six weeks' time to nearly its virgin size, though having a larger cavity and weighing from two to three ounces. During menstruation, and shortly after, the womb is also slightly enlarged and more vascular. In old age it becomes atrophied, more dense in structure and paler in color.

The vagina is a muscular, membranous canal connecting the womb with the exterior, being somewhat constricted at its entrance and dilated at the uterine extremity. It is distensible, with a length of about two and a half inches along its anterior or forward wall and three and a half inches along the posterior wall. Its inner surface is characterized by folds of the mucous membrane, presenting many transverse ridges, these folds being most numerous near the vulval or external opening. There are also, in the virgin, two longitudinal ridges, called the columns of the vagina, one along the anterior wall and the other along the posterior wall, thus making the tube flattened from before backward. The vagina, aside from its purpose as the birth canal, is naturally the excretory duct for the uterine secretions. Beneath the mucous membrance the structure of the vagina is muscular in character, and these muscles help to give support to the womb. Since the normal position of the latter is a matter of much importance in connection with the health of every woman, one may well realize the importance of maintaining these vaginal muscles in a state of strength and vigor, which is only possible when the body generally is strong and well developed. The physically inactive woman is likely to suffer from female trouble in the exact proportion of her inactivity and lack of normal muscular energy.

The external parts of the female generative system are generally known under the name of *vulva* or *pudenda.* The rounded oval eminence situated immediately above the vulva, is the *pubes,* often called the Mount of Venus (mons veneris) which becomes covered with hair at the time of puberty. It is due to the prominence of the pubic bone, the forward portion of the os innominatum. The large, outer lips of the vulva, enclosing the common urino-sexual opening are the *labia majora.* Each lip (labium) has two surfaces, outer and inner. The outer surface is pigmented and covered with crisp hair, while the inner is smooth. These lips are thicker in front forming the anterior commissure; posteriorly they merge into the posterior commissure. The space between the posterior commissure and the anus (rectum), about an inch in length, constitutes the *perineum.* The fourchette, a fold of membrane at the posterior junction of the labia majora is also the anterior edge of the perineum. This perineum is sometimes subject to severe tears in childbirth though the danger of this may usually be obviated by measures for building up the health, strength and elasticity of all tissues.

The *labia minora,* or nymphae, are a pair of smaller inner lips consisting of two small cutaneous folds within the labia majora, these also enclosing the opening of the vagina. Anteriorly, the two labia minora meet and form the frenum of the clitoris.

The *clitoris* is an erectile structure similar to the corpora cavernosa of the penis in the male, its body being short and concealed beneath the labia. Its free extremity or so-called gland (glans clitoridis) is a small rounded tubercle of spongy, erectile tissue and highly sensitive. There is not infrequently a small fold of membrane at the end of the clitoris about which secretions may collect and cause nervous irritation, especially in the case of young girls, if thorough cleanliness of the parts is not observed. The clitoris, like the penis, is provided with a suspensory ligament, and two small muscles, the erectores clitoridis. Between the clitoris and the entrance of the vagina, enclosed on each side by the labia minora, is a triangular, smooth surface known as the vestibule. It usually extends about one-half an inch below the clitoris.

The urethra is the small membranous canal leading from the neck of the bladder and having its opening in the floor of this vestibule, the urine passing out of the body through this channel. Below the orifice of the urethra is that of the vagina, more or less closed in the virgin by a membranous fold known as the hymen.

The hymen varies in shape and size with different individuals, and is sometimes entirely absent. It stretches across the lower part of the vaginal opening, often taking the form of a half moon, and sometimes the form of a ring, while in some instances it almost entirely covers the opening. After marriage it may persist in the form of notched folds. Much injustice and cruelty have resulted from the old habit of regarding the intact hymen as a test of virginity, for, as we now know, it offers no such authoritative evidence, just as its absence indicates nothing.

The truth is that the hymen may be ruptured by violent exercises, or may be destroyed by accidents, especially by falling astride some object. Horseback riding has been known to injure it, but surely the possibility of this trifling result, which is likely to occur only in occasional instances, should not deter any one from the enjoyment of such a superb exercise. Operations and vaginal examinations may be the cause of its absence. On the other hand, the ruptured hymen may sometimes resume its original intact form, this having been proven to be the case with many widows, and even prostitutes have been known to retain the hymen in its perfect form.

The hymen was so named after the ancient god of marriage, and because of the belief prevalent at that time that it was a true evidence of virginity.

MENSTRUATION.—Under normal and healthy conditions the menstrual flow, sometimes spoken of as "the monthly," occurs at intervals of twenty-eight days, or once each lunar month. We have seen that once each twenty-eight days one germ-cell or egg (sometimes more than one) is ripened and discharged from the ovaries, being then carried to the womb, where, if fertilized by the sperm-cell, it may attach itself to the inner wall of this organ, securing the nutrition needed for its continuous growth. The ovum may retain its capacity for impregnation for some time after its escape from the ovary, but if not fecundated, loses its vitality after a time and is finally carried away with the uterine secretions.

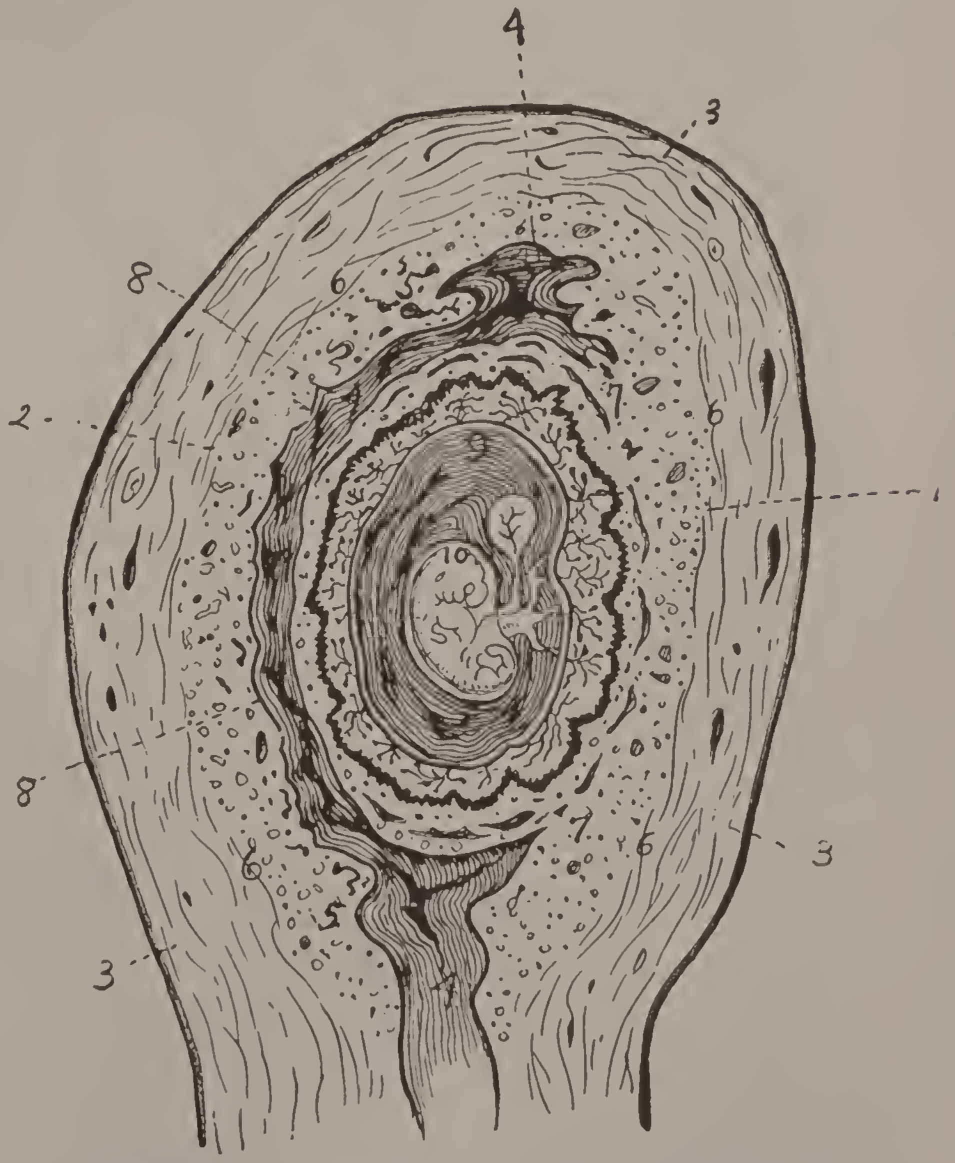
During the swelling and bursting of the Graafian follicle which results in the discharge of the ovum, the vessels of the ovaries and womb, and particularly of the membrane lining of the womb, are so crowded with blood as to produce a state of congestion.

Although most authorities contend that menstruation is the result of the discharge of the ovum the two conditions are not always coincident. During pregnancy, the menstrual flow does not usually appear, though there are occasional exceptions to this rule. Similarly, all signs of menstruation are usually absent during the period of lactation or nursing and until the child is weaned. But so long as impregnation does not take place, there is each month an abundant secretion of mucus, mingled with blood, which is discharged, usually totalling in quantity from four to six ounces of liquid. The discharge of blood takes the form of a capillary hemorrhage, exuding from many fine points as a result of the stretching and weakening of the walls of the capillaries of the uterine mucous membranes, when so crowded with blood. Because of this fact, and of its mixing with a large amount of mucus, including the slightly acid mucus from the walls of the vagina, the menstrual flux does not coagulate, though clots may be formed when the discharge is very profuse. Minute particles of the membranous lining of the womb are also passed out. The duration of the flow varies according to the muscular tonicity, the general habits of living and even the climate. The flow may last from three to seven days, though usually about four, is rather dark in color at first, and gradually becomes paler. Anemic women and those in poor health often have a pale discharge. Women of dark complexion usually flow more than those of fair skins, while fleshy women commonly flow more than those who are thin.

The womb, during menstruation, is of a darker color than in the intervening periods, being also larger and heavier, because of the large amount of blood contained in it. For this reason it has a tendency to fall downward or out of place if the woman is in poor health and the adjacent muscles and ligaments consequently weak. As we have seen, menstruation is a natural condition, intended to provide for the nutrition of the embryonic cell, and in a woman of normal health, strength and all-around bodily vigor, will cause no pain or trouble. In a state of weakness, however, very distressing symptoms often develop. Examined with a speculum, the parts are found red, sensitive and almost inflamed during menstruation, and if one is not vigorous the congestion may be so great as to give rise to pains in the ovaries and womb, often extending to the back, the groins and thighs, together with a general sense of heat, aching and dragging down in the lower part of the abdomen. These are sometimes accompanied by hot flashes, chilliness, and various nervous or hysterical symptoms. It is important that others in the household understand the meaning of these hysterical symptoms, when they occur. Sometimes there is a feeling of fullness and oppression in the head, with dark circles under the eyes, and perhaps an enlarged and painful or sensitive condition of the breasts. In some cases there may be nervous symptoms the day before, or even for several days previous to the coming of the event, with more or less irritability and lassitude.

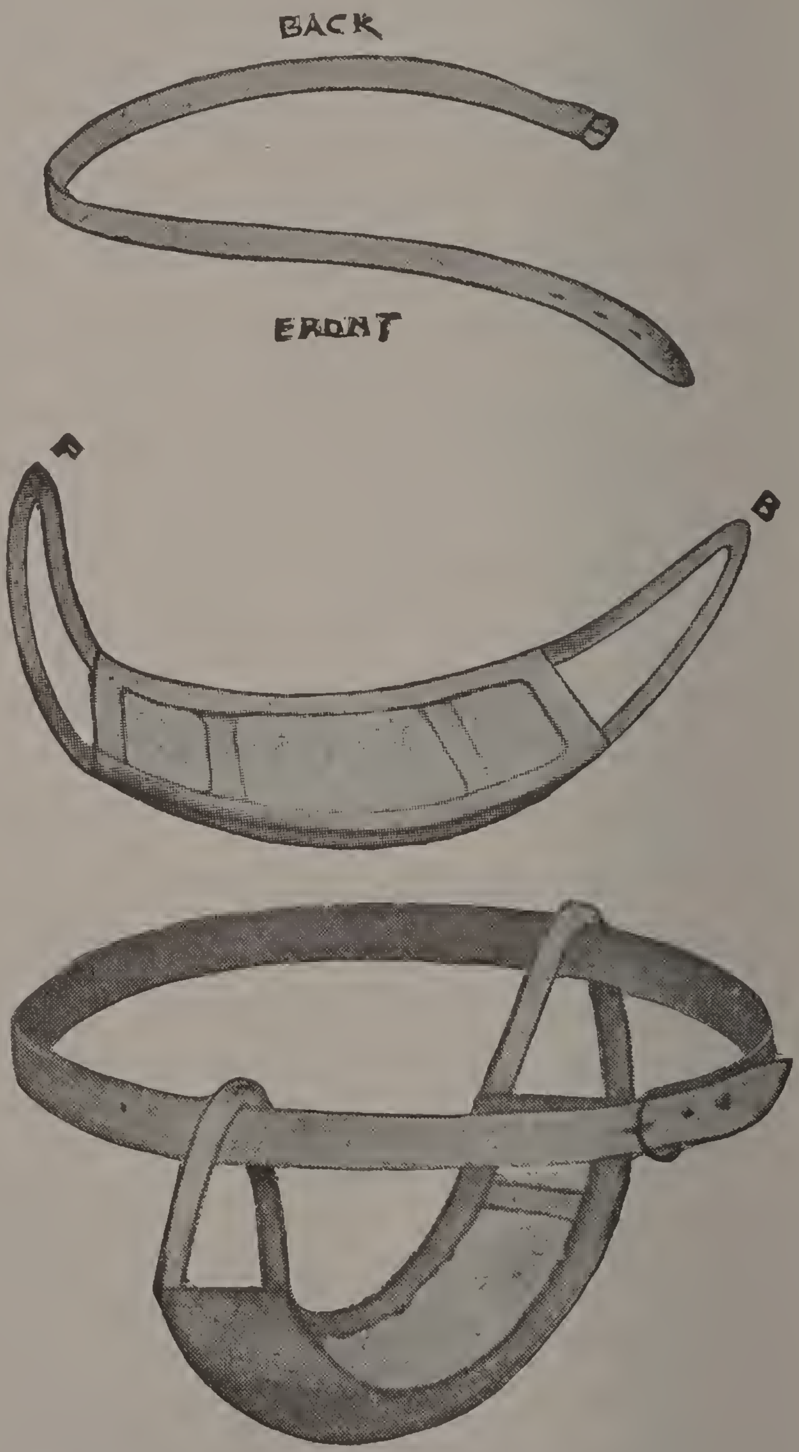
It is sometimes thought that these are the penalties which one must pay for being a woman, but this conception shows an absolute misunderstanding of the entire scheme of Nature. These are the penalties which one must pay, not for being a woman, but for weakness, for the disregard and violation of those natural laws upon the observance of which we depend absolutely for our physical welfare and comfort. All of these symptoms can be avoided, as we shall see in the following chapter, by building up the strength of these and adjacent parts, together with the general vigor of the entire body. There is nothing in the world more simple or more certain.

Certainly when we consider that this state of things is repeated every four weeks, and that the congested or crowded state of the vessels begins some days before the monthly flow, and endures for perhaps ten days in all, or about one-third of each month, we need not wonder that, in the case of weak and unhealthy women, a condition of chronic inflammation should sometimes supervene, with all its attendant suffering. When we further consider the common use of tight corsets, high heeled shoes, heavy skirts with their tight waist bands, and other abominations of women's fashionable dress, and add to this the lack of wholesome exercise, errors of diet, indoor life, late hours and the general carelessness in all matters of health, pain and discomfort are only natural results.



Diagrammatic outline of womb with fetus at five weeks. 1, Forward wall of womb, with placenta forming and attached; 2, posterior wall; 3, muscular substance of walls of the womb; 4, cavity of the womb; 5, decidua vera, with grooves and prominences showing glands and blood-vessels; 6, base of decidua, with deep glands; 7 to 7, decidua serotina; 8, reflexa: 9, chorion with villi, shown in cross-section; 10, embryo.

The muscular tone of the parts is a factor of far greater importance than is usually realized by medical authorities, in minimizing the discomforts and inconveniences of the menses. Likewise the flow has been found to be greater with those who are heavily clothed than with those who dress lightly. The more nearly natural the conditions of life, apparently, the less profuse the capillary hemorrhage from the uterine membranes. It is believed that the menstrual flow provides a channel for the elimination of impurities, and naturally also, when the blood is in a very pure and wholesome condition there would be less discharge. The greater activity of the skin when uncovered or lightly clothed would naturally tend to keep the blood more pure. It is said that menstruation was found to be unknown in a tribe of savages inhabiting a certain island in the Pacific, discovered by an explorer, in which the women wore no clothing whatever. This would seem to approach the complete lack of any such phenomena among the females of the lower animals—certain apes are said to be the only animals that menstruate. It is certain that conditions of natural living, comparative freedom in the matter of dress and a state of vigor



Sanitary pad container, made of rubber-silk or waterproof sheeting. Absorbent cotton may simply be placed inside, or even a small folded napkin under the transverse strips. Any simple belt, as shown, may be used. The lower drawing illustrates the position and adjustment of the device when worn.

similar to the hardy strength of any healthy animal, will give any woman immunity from suffering at these periods and also enable her to avoid any very profuse flow.

As a matter of fact, the menstrual flow is affected to a marked extent by the diet and method of living of the individual. It is reasonable to suppose that the excessive flow which exists in some cases is a result of an attempt of the system to eliminate impurities resulting from the stimulation of artificial habits.

That this is not mere theory, and that ample proof can be adduced for this belief, is proven by two contributions to the pages of *Physical Culture,* published during 1908, and from the pen of Miss Olga Howe. We append a brief extract which gives Miss Howe's experience in this matter:

"When I first began to struggle for health, I was living an ordinary conventional life. Slowly but surely my dietetic and other habits were changed. My attention was especially attracted to the menstrual period because I suffered severely at those times, my period remaining from seven to eight days; but after following the theories advocated by physical culture for about three years, I was astonished when I noticed that the flow had diminished until it only continued three days. At first this discovery merely aroused my curiosity, but after a time it was the source of intense interest to me. I asked myself the question: Why should the change in my diet, the exercise, etc., have lessened the menstrual flow?

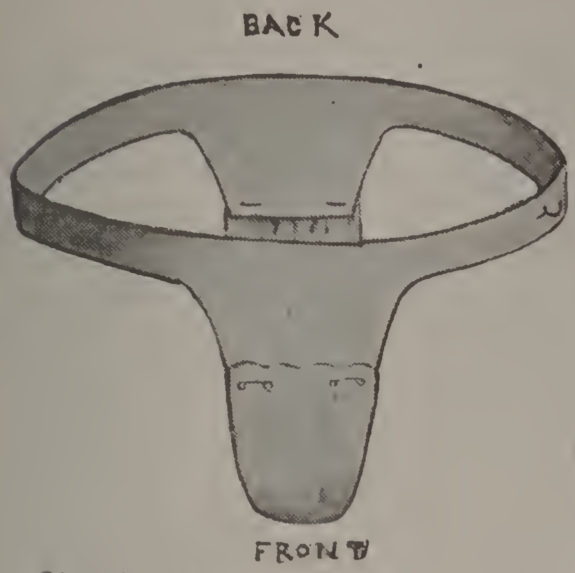
"As the result of much careful thought on the subject, I finally became convinced that this function, which is considered normal by the average woman, as well as by all physicians, was nothing more than the means used by the system to eliminate surplus impurities. When I arrived at this conclusion, you can well understand that I was ready for some experimenting with the view of proving the accuracy of my theory. I immediately commenced to use various methods with the object of purifying the body. At that time my knowledge of physical culture was limited, but my enthusiasm grew as I continued my experimentation. Some will no doubt call me an extremist, but I was anxious to improve my physical condition, to strengthen my body.

"During my experiments with the raw food for one year, the flow gradually lessened. This success stimulated my determination, and I concluded to continue my efforts, though I had to continue to follow these methods for two years before my system was so thoroughly strengthened and purified that the menstrual flow ceased entirely. After procuring such remarkable results, you can well understand that my faith in the simple life increased a hundredfold, though to a certain extent I continued my experiments. For ten months I lived on a diet of fruit, nuts and cereals, taking two meals each day, being very careful to masticate every morsel to a liquid, and never consuming more than was necessary to fulfill the requirements of the body for rebuilding waste tissue. During this entire period I enjoyed better health than ever, and was much stronger. In fact, never before trying this diet had I fully realized the true meaning of superb, exhilarating health.

"On one ocassion, in order to prove that diet alone was responsible for this physiological change, I included cooked vegetables, butter and milk in my daily bill-of-fare and in one month the menses appeared again. A few days' fast and an exclusive uncooked food diet quickly proved a remedial agent. I would not, of course, advise a beginner to adopt this radical regimen all at once, but give it a trial gradually.

"If you are accustomed to a cold bath each morning after exercising, do not for any reason omit either the exercise or the cold plunge during the period."

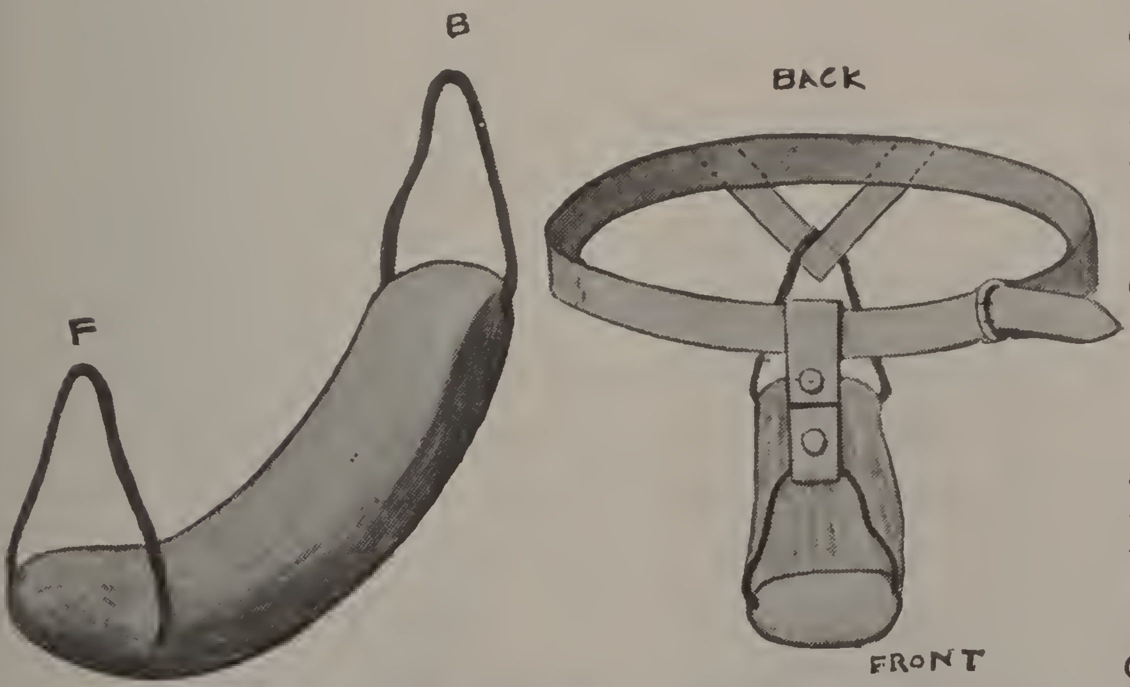
Care of the Body During Menstruation.—The matter of bathing and general cleanliness is a most important one, even more so at this time than at any other. The intelligent and up-to-date woman no longer has any sympathy with the antiquated notion that bathing at this time is a dangerous proceeding and to be avoided at all costs, even that of bodily unwholesomeness. The question of bathing with cold water at this time is one that may be determined



Simple sanitary belt, buttoned at the side, with napkin attached with safety pin.

only by the strength and resistance of the individual. There are some who can take and benefit by a cold bath each morning during the monthly period the same as at other times, while there are others who should under no circumstances attempt such a thing. This phase of the question is covered clearly in Volume III of this work, pages 1506-8, which should be read carefully. In every case, however, sponge baths may be taken in a warm room, and the usual warm baths for purposes of cleanliness, while local washing may be practiced as frequently as necessary, preferably with each change of cloth, and using a mild antiseptic solution if the characteristic odor of the flow is sufficiently marked to make this desirable. This odor is more marked in some cases than in others, though in a thoroughly healthy woman it may scarcely be detected at all.

Linen napkins are usually preferable to cotton, inasmuch as they are more absorbent. They wear so much longer that they are probably just as economical in the end. However, the rule of frequent changes is the most important consideration. In some cases the use of pads of absorbent cotton enclosed in folds of gauze is to be preferred to the sanitary cloths, especially when laundry conveniences are not at hand and it is desirable to



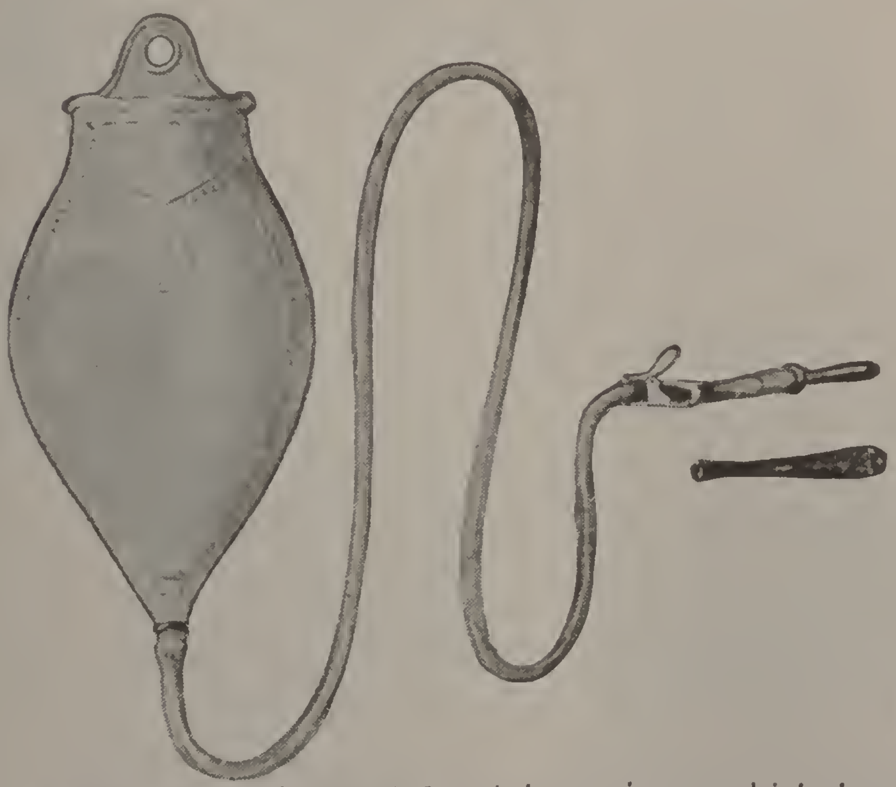
A convenient sanitary pad and method of supporting it with a belt. The pad may be made of any suitable absorbent material, for instance absorbent cotton wrapped or rolled in sterilized gauze or cheese-cloth.

burn them. Always they should be scrupulously clean. In the case of napkins the process of ironing with a very hot iron serves fairly well as a means of sterilization. It is usually best to be provided with a light girdle with tabs to which to pin the folded cloths of cotton pads, such a girdle being more elastic and satisfactory if cut upon the bias. The napkin should not be too large, and need not be large if changed with proper frequency. Neither should they be worn too tight, for the pressure will cause heating, discomfort and general irritation of the parts. Uncleanliness at this time may sometimes give rise to inflammation of a more or less serious character.

If the coming of the menstrual period is attended by a lack of appetite, nervous symptoms or other disturbances, it is often well to fast either for one or two meals, or for one or two days, at the same time drinking plenty of water. The beneficial influence of a fast under these circumstances is truly remarkable in most instances, the general reasons for which the reader can only appreciate by a reference to the discussion of the therapeutic aspects of fasting as given in the first chapter of Volume III. Where there is pain, the application of heat is usually invaluable, applied either through fomentations or hot sitz baths, while the drinking of hot water may likewise bring relief. This matter will be discussed in the following chapter. The condition of the bowels, however, is a matter of extreme importance. Since, as we have seen, the womb is placed directly between the bladder, in front, and the rectum, in the rear, a condition of constipation will cause such pressure as greatly to aggravate all of the symptoms, or, in some instances, to cause a state of inflammation and general disturbance that would be imperceptible if the colon were properly emptied. An enema may be recommended just previous to menstruation and even during same, if there is any doubt that the bowels have been sufficiently active. And a hot enema, by the way, is one of the most perfect means of applying heat to the womb in case of inflammation and pain. (See Vol. III, pages 1454-1461.)

The common injunction to avoid standing for long periods at this time may be of especial value in the case of one who has never taken up measures for strengthening and building up her body. Because of the increased size and weight of the womb at this time, the weak woman will naturally experience a dragging down sensation, expressing the tendency to prolapsus, or falling down of the parts. If the muscles and ligaments are strong, this cannot happen, and she will not experience the general condition of strain and the nerve irritation from which she will otherwise suffer. It is all such an exceedingly simple matter, and yet one of such importance as far as the comfort and welfare of the woman is concerned, that on this account alone she cannot afford to neglect her physical health. If intelligent, she will not fail to adopt every possible physical culture measure for strengthening and perfecting every part of her body.

Cleanliness at other times is likewise a matter of importance, but in this one should be concerned more with the external parts than with the internal organs. In ordinary circumstances the internal parts may be trusted to take care of themselves, and the woman who enjoys pure blood and vigorous health need never give them a thought. There are those who advise a daily vaginal douche with some antiseptic solution for every woman, but it is truly an exceptional case that will require this. The acid secretions of the vagina are themselves of a mildly antiseptic nature, so that the organ is really self-cleansing, and the average healthy girl will



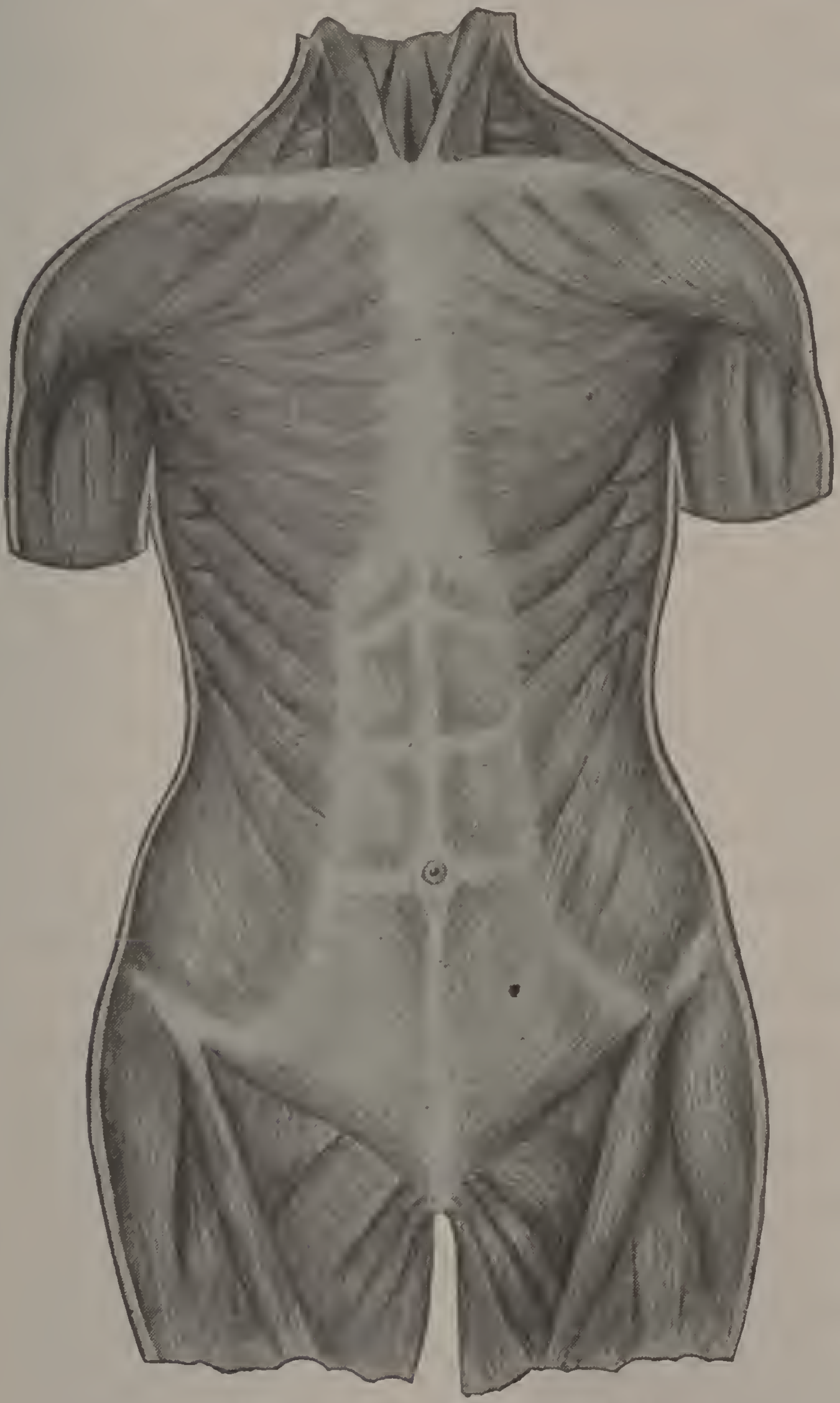
The common type of fountain syringe, which is the best for douches and enemas. There is no force employed, the weight of the water alone being sufficient for all purposes, and avoiding any rupture or straining of tissues.

probably never need a douche at any time. Perhaps a douche may be advisable once each month, immediately following menstruation, as a means of removing any secretions which may be retained in the folds of the vagina, and which might there cause irritation, but the more active the young woman the less likely is it that there will be any such retention. Certainly the healthy, pure-blooded and vigorous girl need not consider the question of douches at any other time, unless there is special occasion. The douche should be warm, or of about the temperature of the body (98 degrees Fahr.) if one has no bath thermometer to determine its exact temperature, or a little warmer, from 100 to 105 degrees, if desired. Since the douche is desired only for cleansing purposes, the warm water will be much more effective than cold, and it is best to use that which has been previously boiled. The use of a mild antiseptic in the douche is a matter to be determined by individual needs. A solution of boric acid may be employed in this way, while those desiring a more powerful antiseptic frequently use bichlorid tablets (corrosive sublimate) in a 1 to 2000 solution, one tablet to a quart of water. A 1 to 5000 solution is usually better, one tablet to two and one-half quarts of water. Of course there is always danger in having poisonous tablets of this kind in a house where there are children around. Unwholesome vaginal discharges always indicate a condition in which frequent douches will be of advantage.

The external genitals, however, require strict daily attention in order that they may be kept wholesome. They should be sponged or washed each day with absolute thoroughness, paying special attention to the folds of the labia. These parts are kept moist by the secretion of a lubricating material, but offensive accumulations will result if they are not kept clean. Carelessness in this regard is almost unpardonable. Not only should one remember that uncleanliness in this connection may result in irritation and inflammation, but also that strict cleanliness and wholesomeness of every part will be found to be a tremendous factor in directly aiding one in maintaining one's self-respect.

The suspension of menstruation is generally regarded as one of the first signs of pregnancy, though, as we have seen, there are exceptions to the rule, and the flow may appear once or twice subsequently to conception. There have even been rare cases in which it has continued regularly after conception. Such a condition almost always indicates an abnormal or unhealthful physical condition.

Now, impregnation is much more likely to take place, as we have already seen, immediately before or after menstruation than at any intermediate period. There have been instances in which an apparent condition of sterility has been overcome by taking note of this fact. The general attitude of the female generative organs during coition is largely passive, though under the influence of sexual excitement there is a considerable degree of inflation in the erectile tissue surrounding the vagina, together with an increased secretion from various



The "Natural Corset" provided by the abdominal and other muscles of the trunk in the case of every normal and well developed woman. These muscles, if properly developed, give form, beauty and character to the female figure, hold the internal organs in their proper places, and give the strength and support necessary in the crisis of childbirth.

glandular follicles. It appears, however, that conception may take place regardless of these changes, even in profound sleep or narcotism. It is supposed by some authorities that the os uteri dilates by a kind of reflex action to receive the semen, though this is doubtful. The mere introduction of a small quantity of the seminal fluid just within the vagina or even the labia may be all that is necessary to bring about conception, the spermatozoa being extremely active in making their way to the womb.

THE PERIOD OF PUBERTY, or the commencement of the aptitude [illegible] procreation, in the female, is usually between the thirteenth and sixteenth years. From the standpoint of time, the reproductive power is more limited in women than in men, usually terminating at about the forty-sixth year. Puberty consists in the development or maturing of the sexual organs, which, as a rule, takes place at an earlier age in warm climates than in those that are temperate or cold. The average in temperate zones is fourteen years, while in tropical or nearly tropical countries the change may occur as early as the tenth or eleventh year. It is usually hastened by conditions of mental precocity, city life and especially by the reading of erotic and exciting novels. Reading of this sort has a truly pernicious influence upon the physical development and nervous system of young girls, and every effort should be made to keep them rather in the open air and engaged in active play. It is greatly to one's disadvantage to arouse this function earlier than would naturally be the case.

The signs of approaching puberty are the growth of hair on the pubes and other parts of the body, the enlargement of the mammary glands or breasts, the broadening of the pelvis and hips to make room for the development of the generative organs, together with a general increase in the roundness, fullness and grace of the entire body. There are often mental changes of a noticeable kind, including a more retiring disposition and a more serious general mental attitude. As a rule the first appearance of menstruation is preceded by a general disturbance of the system, including such symptoms as sleepiness, sluggishness of mind, headaches, dizziness, a sense of fatigue in the lower extremities and perhaps pains in the loins. In the first instance the full menstrual flow may not assert itself, there being presented only a moderate discharge of mucus and very little blood. This need occasion no alarm, however, for subsequent periods will without doubt bring forth the normal menstrual flux. It should also be said here, that the interruption of the function in young girls should not cause alarm, for in some cases there are intervals of several months in which there are no signs of the phenomena. Every effort should be made to assure the best general health, with no late hours, dissipation or waste of vitality, and Nature will take care of her processes in the most perfect manner. Sometimes there are changes and developments going on which occasion these lapses of time between the menses during the first one or two years of their occurrence, and one need feel no concern regarding them, especially when the apparent absence of the function does not cause inconvenience or ill-health. But the sudden stoppage of the flow after it has begun, through a severe chill or other disturbance, will sometimes give rise to difficulties.

A vast amount of energy is required by the changes taking place in a girl's body during the period of puberty, and for this reason it is especially important that she should take good care of herself, especially to avoid all forms of nervous strain. Unfortunately, most girls just at this delicate period are subjected to the very greatest mental strain in their school life, being crowded with studies and duties almost innumerable. In some cases, this demand upon the strength of the little potential future mother is nothing short of criminal in nature, and in a vast number of instances it would be best if she were taken out of school entirely for two or three years, or until her body has entirely developed and she can spare the energy necessary to keep up with the strain imposed by our exacting and over-burdensome curriculums.

It is sometimes said that a girl should not be subjected to any marked physical exertion during this period, but this advice is rather misleading in many cases inasmuch as it may deter one from the practice of wholesome outdoor games and exercises. It is true that the girl should have as much rest as she needs, and especially as much sleep as she can get, and that a great deal of violent exercise is not desirable, but when the average mother is told that the girl should be taken good care of there is always a tendency to occupy her too much with the indoor requirements of housekeeping, together with the learning of sewing, embroidery and other forms of needle work. For fear of physical over-exertion, she is encouraged to avoid the familiar outdoor pastimes, told that she is now becoming a young woman and instructed to conduct herself with appropriate dignity. If there is one foe to health and strength, it is dignity. A noted humorist once said that dignity is no more the evidence of wisdom or individual worth than a paper collar is the evidence of a shirt. There is a form of true natural dignity which is inseparable from the person of character and intelligence, but it is a dignity which is not lessened or affected in any way by indulgence in playful games or fun of any kind. The stiff and artificial dignity that thinks itself above the spirit of frolic and play is nothing more nor less than a sham, a cloak of hypocrisy that tends to smother or crush out the joy and fullness of life wherever it is encountered. Dignity that is assumed only argues the lack of any real attainments or character.

Therefore, let the young girl at this age, more than at any other time, keep up her girlhood sports and open-air games. Remember that the necessary rest should be chiefly concerned with relief from all forms of nerve strain, rather than the cessation of physical activity. The physical disturbances incident to this trying period may be said to be in inverse proportion to the health and vigor of the individual, the frail girl of indoor habits being likely to suffer considerably, while her strong and energetic cousin of the "Tom-boy" type will undergo the change from girlhood to womanhood with the very least inconvenience. Adolescence is the term often used to denote the period of youth between the beginning of puberty and the attainment of complete physical maturity, in girls usually between the ages of twelve and twenty-one years, and in boys between the ages of fourteen and twenty-five, or thereabouts.

It is very important that the girl should be informed of the approach of puberty by her mother or some one else capable of giving her a clear understanding of the phenomenon of menstruation, so that she will not be frightened at its first appearance. She should be taught that it is a natural condition, and that it represents the possibility of motherhood. In this way she will avoid the mistake of regarding it in a distasteful light, but will on the contrary see in it the welcome evidence of her coming womanhood, bringing with it the possibility of realizing what to a true woman's heart should be sweeter and dearer than any other ambition that she might cherish. She should be taught how to care for herself at this time. She should know, especially if she is not strong physically, of the increased size and weight of the womb at the monthly period, making it inadvisable to subject herself to any physical strain at this time, even though she does not follow the common advice to lie down much of this time. But most of all she should know that suffering at this period is an abnormal condition, indicating something wrong, a state of affairs which may always be overcome and thereafter avoided by general physical culture methods for strengthening every part.

THE MENOPAUSE, or "change of life," as it is so commonly called, marking the end of the child-bearing period in the life of a woman, usually comes at about the forty-sixth year, on the average, though varying in different cases as much as ten years earlier or later. Cases have been known in which it has occurred as early as the thirtieth year. In a general way it may be said that women who enjoy vigorous constitutions and a great deal of vitality usually retain the possibility of motherhood for a longer time than those less fortunate in the way of physical health and strength. It is sometimes said that those who commence to menstruate early continue to do so later than in the average case, while those who mature late arrive at the change earlier. This cannot be regarded as a rule, however, for precocity in this respect may be the result of artificial conditions, and is often likely to be disadvantageous. Prematurity is never desirable, and it often happens that the girl, who, leading a natural and active outdoor life, reaches puberty a little late, retains her youthful appearance, good looks and the possibility of maternity much longer than those who had the start of her by several years in experiencing the monthly function.

The menopause, sometimes also called the "climacteric," is usually the occasion of a great deal of anxiety, though there is no need of this if one takes proper care of her health. It is true that there are numerous and somewhat important changes taking place in the body, including the cessation of the functions of the ovaries and womb, with the process of their atrophying or shrinking in size, and the readjustment of the nervous system to conform to the altered condition, but all of these processes will often take place in a strong and normally developed body with very few or even no unpleasant symptoms.

In many cases, however, there are various disturbances of the system, just as in the case of puberty. Irregularity in menstruation is one of the most common signs of the change. Sometimes the monthly flow will be entirely absent for several months at a time, and then suddenly reappear in an extreme form. Many women complain of hot flashes, headaches, migraine (pain in one side of head), digestive disturbances, cramps in the legs and in other parts. Nervous symptoms are most common, ranging all the way from mere irritability to apparent temporary mental derangements. It is well for others in the household to understand these facts, in order that they may be of as much help as possible in making the way easy. Without doubt a great deal of the harm done at this time comes through the tendency to worry over all that has been said by uninformed gossips about the dangers of this period. There is absolutely nothing to worry about if the subject of the change will take proper care of herself and simply follow general methods of health building, the same as at any other time of life.

However, when we speak of a woman taking care of herself, we do not mean, as some of our grandmothers would have supposed, that she should stay in bed or adopt a general coddling regimen. It is just as necessary as ever at this time, indeed, even more necessary, that the physical strength should be kept up, and therefore, while violent exertion should be avoided, and while one should secure all the rest that her instincts may prompt her to secure, the woman passing through the climacteric should make it a strict rule to take daily mild exercise in the form of walking and other not too strenuous activities, to spend as much time out-of-doors as possible, both summer and winter, to let the outdoor air into her living and sleeping rooms through open windows, to observe regularity and discretion in the matter of diet and in all other ways to cultivate health and energy.

THE BREASTS, while not directly connected with the organs of generation, are intimately associated with them, and through their function of nourishing and sustaining the new born babe they are of great importance in the general scheme of reproduction. They consist of the *mammary glands*, surrounded by a certain amount of fatty tissue. The breasts vary in size with different individuals and at various times of life in the same individual. Before puberty they are small and inconspicuous, but they gradually develop and enlarge as the generative organs develop. During pregnancy they increase in size, the glands secreting milk, which after the birth will be available for some time to come. After the change of life the glands shrink considerably, though the breast may sometimes retain its size or even gain in weight through deposits of fat. Otherwise, the entire breast will become somewhat atrophied. The left breast is often a little larger than the right.

The mammary gland consists of a number of lactiferous ducts, passing inward from their termination in the nipple and then subdividing and spreading around like the branches of a tree, ending in minute glands or lobuli which secrete the milk. The lactiferous ducts are fairly straight tubes, perhaps ten or twelve in number, and dilating toward the nipple into the form of small reservoirs.

The nipple is a conical eminence, capable of undergoing a sort of erection from mechanical excitement. It has a wrinkled surface, marked with small papillae, and is perforated by numerous orifices, the apertures of the lactiferous ducts. About the base of the nipple are numerous sebaceous glands which enlarge during lactation, secreting a fatty substance

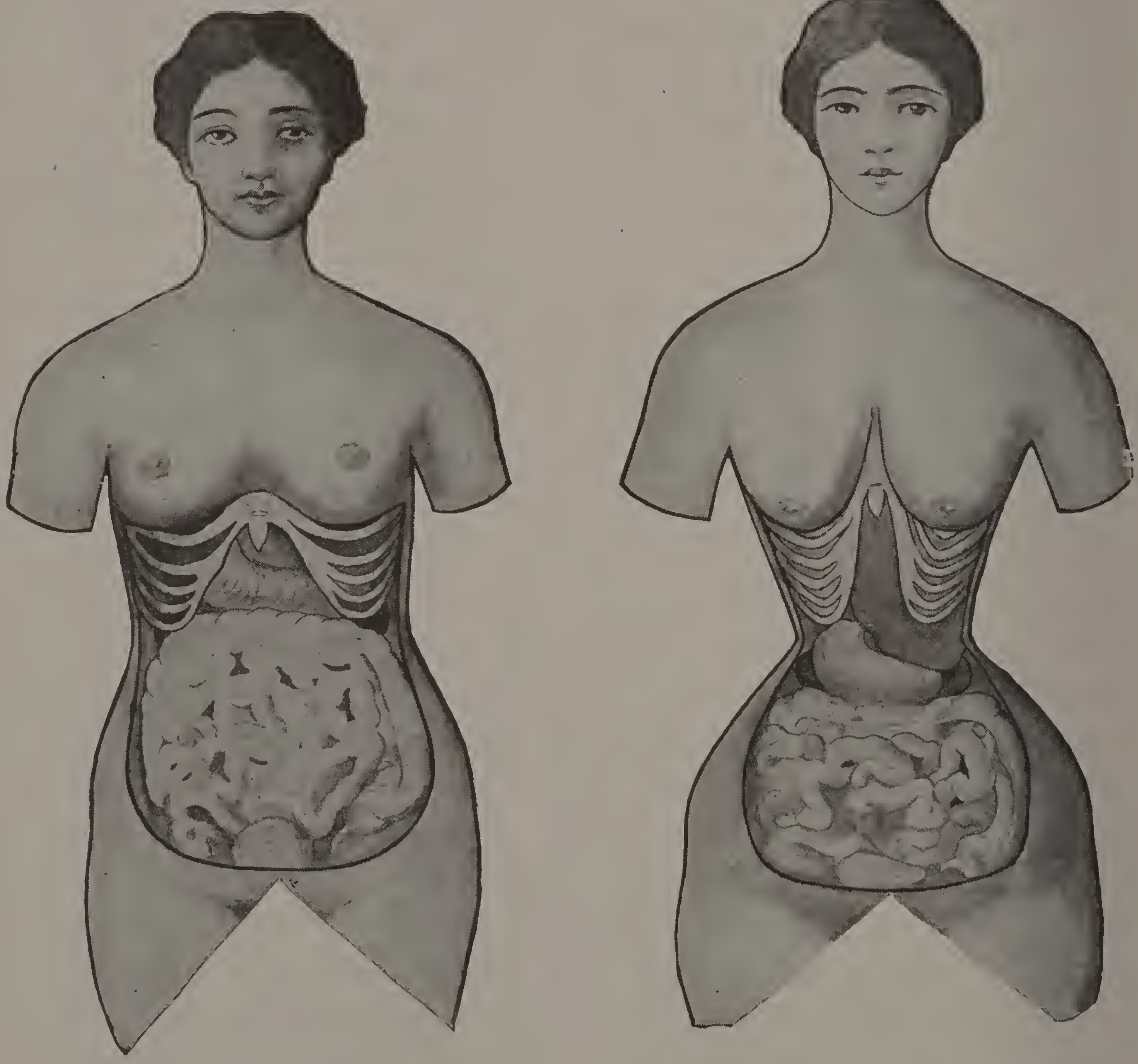


Illustration of the influence of the corset and tight clothing upon the female figure and the internal organs. The normal figure at the left and that deformed by the corset at the right. Note the compression of the lungs and thorax generally as shown by the ribs, also the state of the bust in each case. The stomach and liver are crowded and the intestines forced downward. The downward pressure upon the generative organs will be apparent, causing falling of the womb, or other displacements, inflammation and other disorders of women.

which serves to protect the integument of the nipple during the act of sucking. The surface of the nipple is dark colored and is surrounded by a colored ring known as the areola. The areola is of a delicate rosy hue in the virgin, but about the second month after impregnation it enlarges and takes on a darker tinge, which in some cases increases as pregnancy advances to a dark-brown color. These changes of color may be of importance in helping to determine the question of pregnancy.

Lactation is usually continued by a healthy mother for nearly a year, though sometimes it may be continued longer than this with advantage. The nursing mother should not allow the child to hang on the breasts; instead, she should hold it well up to the nipple. Any such pulling down of the parts will tend to make them flaccid and shapeless. Loss of sleep, worry, anger and all other influences detrimental to the general well-being of the body, will likewise help to destroy the beauty of the breasts.

For those deficient in bust development, an improvement by natural physical culture methods is a very simple matter indeed, depending upon both local and constitutional improvement. Cold water offers an excellent tonic for the breasts, though this should be combined with appropriate exercises and other constitutional methods for improving the quality of the blood, promoting the general nutrition of the body and building the greatest possible degree of vitality. This aspect of the subject is covered in some detail in the chapter on Physical Training for Women, in Volume II of this work, presenting special exercises for the purpose and also considering the question of the normal size of the perfect bust, with illustrations of the same. Treatment for special diseases of the breast will be found in Vol. IV.

CHAPTER IV.

DISEASES OF WOMEN.

IT is a well-known fact that, generally speaking, the greater part and, without doubt, also the most lucrative part of the practice of the medical profession has to do with the ailments peculiar to women. If it should happen suddenly that women generally became vigorous and healthy in these respects, the profession of doctoring would immediately become unprofitable to such an extent that a great host of those employed in it would have to seek some other line of business or work. One sad aspect of the subject is that those who are so unfortunate as to suffer in this way receive little or no benefit from the treatment prescribed for them, being compelled to continue to suffer and to continue their patronage of those who chiefly "profess" to aid in cases of this kind. However, the happy fact remains that practically every case of this kind can be cured absolutely and permanently by the methods which are presented in these volumes, if only the sufferer can be induced to make the change from medicine and surgery to physical culture.

Surgery is especially to be condemned in the treatment of diseases of women, not only because it fails to accomplish the results desired, but because of its unsexing influence and its unnecessary mutilations. Surgery is extensively employed in cases of this kind, and although there are cases in which it is undoubtedly necessary and of distinct value, it is practically useless in the great majority of instances. The woman who has been unsexed by the removal of the essential generative organs is a woman no longer. She has lost the finer instincts of superb womanhood, she is devoid of her former magnetic qualities, her entire nature is altered and in a great number of cases she suffers from mental disturbances. She is merely the shell of her former self and life has comparatively little meaning for her. Operations of this kind should be tolerated only as a last resort, as for instance, in the case of a cancer which has gone too far. The ordinary complaints of women, even including those often considered incurable by the advocates of other systems of treatment, can be perfectly remedied in practically every case by our methods.

In considering these various weaknesses and diseases of women, I wish especially to emphasize the importance of constitutional treatment for building up the strength and vitality of the entire body as the first and most essential factor in their cure. Local treatment, in most instances, is at the best chiefly of a palliative nature, intended to soothe and relieve pain or to reduce inflammation. It is true that improved local circulation may be of material help in the actual curative processes, but these really depend, primarily and finally, upon an improvement in the purity and quality of the blood supply.

Consequently, in all cases it will be necessary to adopt a general vitality-building regimen (see Vol. III, pp. 1791-97) suited to the condition and strength of the patient. So far as they may be ascertained, the causes of the disorder should be removed, as for instance when the use of corsets, or other improper dress may be involved. For the most part, the special disorders of women are directly the result of weakness, poor circulation, impure blood and to some extent improper carriage. Naturally, all of these conditions are more or less related, and may arise from a great variety of primary causes, such as are enumerated with considerable detail in our previous chapter on the causes of disease. Anything which tends to lower the vitality or undermine the system generally may be regarded as a contributing cause of almost any of the common women's diseases, whereas all measures which strengthen and invigorate all of the tissues and organs of the body generally, accelerate the circulation, promote more perfect elimination of waste-poisons and purify the blood, will have a favorable influence upon all disorders of this type. It should be said also that the excesses and abuses of the marital function, common to modern married life among the uninformed, is a prominent cause of the weakness, laxity and prolapsus of organs and tissues and the inflammations from which so many married women suffer. The reader should study carefully the discussion in a previous chapter of this volume of the imperative need for temperance in the marital relation, if not continence, and the strict rule of recognizing the womanly instinct as the supreme arbiter in all matters of this kind.

Suitable exercises are particularly important in overcoming all disorders of women, especially where there are displacements of the organs, for by no other means can the muscular weakness and laxity of ligaments be overcome. In connection, therefore, with the special treatment suggested for these various ailments, the reader is referred to Chapter V of Vol. II, pp. 994-1053, and also to the vitality-building regimens given in Vol. III, referred to above. The alphabetical arrangement of general subjects is observed in this chapter.

ABORTION.—See Vol. IV, p. 2197, also Chapter V of this volume.

AMENORRHEA.—See *Menstruation, Absence of; Suppressed; Retained.*

ANEMIA.—See *Chlorosis,* also *Anemia* in Vol. IV.

ANTEFLEXION.—See *Womb, Displacements of.*

ANTEVERSION.—See *Womb, Displacements of.*

BARRENNESS.—See *Sterility.*

BREASTS, DISEASES OF.—See Vol. IV, pp. 1908, 1909, 1917.

CANCER OF WOMB.—See Vol. IV, pp. 1915, 1917, 1919, 2402.

CHANGE OF LIFE.—See *Menopause.*

CHILDBIRTH.—See Chapter V of this volume.

CHLOROSIS.—Green Sickness. This is a serious disease of young women, and may be regarded as a peculiar form of anemia. (See *Anemia,* Vol. IV, pp. 1850-51.) It arises through imperfect development or a feeble constitution, and is especially favored by sedentary and inactive habits, as well as by generally unhealthful conditions of life. The blood is impoverished, loses a part of its hemoglobin and red globules and increases its watery elements.

Symptoms. The skin is pale, and sometimes of a green or yellowish hue; the bowels are torpid; the digestion impaired; the appetite generally lost or perverted. The tongue is white; the head occasionally aches; the patient sometimes feels dizzy; and the nervous system is sensitive and weak. Chlorosis is generally connected with either retention or suppression of the menses. However, emmenagogues (drugs intended to stimulate or force the menstrual flow) should be rigidly and absolutely avoided.

Treatment. A girl suffering from this disease should be kept outdoors all of the time, both day and night, if possible, or at least should be kept out in the open air the greater part of the time, and not taxed with studies or school work. Outdoor sleeping is particularly recommended.

Active exercise is especially important, though to be kept within the narrow limits of the patient's strength. Walking is admirable, in addition to some daily special exercise for strength building. Air baths and sun baths are of value, together with the free use of cold water baths, suited to her moderate recuperative powers. (See Volume III, pp. 1399, 1409-10, 1422, 1448, 1470, 1478, 1508.) Special attention should be given to the bowels, using occasional hot enemas, as these act also upon the uterus.

Beyond these suggestions, a course of general constitutional treatment should be adopted, such as that described in detail for *Anemia,* in Volume IV, p. 1850 (which see). Everything possible should be done to build vitality and improve both the quality and circulation of the blood.

CLITORIS, HOODED.—Condition caused by small fold of mucous tissue surrounding clitoris. See pages 2491-2492.

DISPLACEMENTS.—See *Womb, Displacements of.*

DYSMENORRHEA.—See *Menstruation, Painful.*

ENDOCERVICITIS.—See *Womb, Inflammation of.*

ENDOMETRITIS.—See *Womb, Inflammation of.*

FALLOPIAN TUBES, INFLAMMATION OF.—(Salpingitis.) Inflammation of the Ovarian or Fallopian Tubes is not an uncommon condition. Inasmuch as the mucous membrane of the interior of the womb is continuous with that of the vagina on the one end and with that of the tubes on the other, it is a simple matter for inflammation of the womb or vagina to travel up to the tubes, and through them even to the ovaries or the peritoneum. Peritonitis is not infrequently caused by the spreading of inflammation from the Fallopian tubes. The more severe forms of inflammation of the tubes are frequently caused by gonorrheal infection of the vagina and womb, and by blood-poisoning after childbirth. Inflammation of the womb following abortion or miscarriage may likewise cause this condition. The irritation and weakness caused by sexual excesses may lead up to this disorder, as well as displacements of the womb, lacerations, fibroid tumors or a severe bruise. Remember, however, that the inflammation always depends upon an impure condition of the blood, except perhaps where the trouble arises from an injury, and even then the possibility of inflammation or the degree of it will depend upon the relative purity or impurity of the blood supply. Inflammation of the Fallopian tubes may lead to inflammation of the ovaries, as already said, involving both at the same time. (See *Ovaries, Inflammation of.*)

Inflammation of the Fallopian tubes may be either acute or chronic. Acute salpingitis may become a very serious matter in its purulent form, causing violent illness. The tubes become swollen, very painful and tender, and the patient is compelled to lie down. The temperature rises, the pulse is rapid, the abdomen is bloated, and frequent urination is necessary. There is marked restlessness and weakness. On examination there is fullness or bulging of the roof of the vagina, and perhaps the swollen tube may be felt. If the disease progresses and pus forms, we have what is called "pyosalpinx," or pus-tube. In this case both ends of the tube close up, and it is distended with its contents, perhaps swelling to alarming proportions, for instance, to the size of a child's head, while the pus can find no outlet. This is a serious condition, usually resulting fatally if the pus is discharged internally into the abdomen.

Chronic salpingitis is something in the nature of a catarrhal condition, and is marked by pain, which though it may vary, is nevertheless almost constant, and increased by exertion, defecation or coition. In such cases the pain is intense during menstruation and for a few days before. The menstrual flow is usually profuse and of uncommon duration.

Sterility is inevitable if the inflammation finally results in closing up or obstructing the tubes.

Treatment. The treatment for a case of purulent salpingitis should be not unlike that for Peritonitis given in Volume IV, though the special treatment for ordinary cases should be that given for diseases of the ovaries on page 2231 of Volume IV. In chronic or catarrhal inflammation of the tubes the regimen outlined there should be followed absolutely. The chronic form usually begins slowly and gradually as a result of some neglected womb trouble, and is troublesome largely because it is chronic. At the same time, however, it opens the way for a severe acute attack at any time, and should not be suffered to continue. Continence is imperative.

In a very severe case the fast is particularly important, and should be continued for at least ten days, or until the symptoms begin to subside, whereupon the milk diet indicated in Breaking-Fast Regimen No. 17 can be adopted. Rest in bed will be necessary in a very severe case, with hot packs, hot enemas, and even hot vaginal douches, using perhaps a gallon of water at 110 degrees to 115 degrees Fahr., which will be found efficacious in relieving pain and congestion. The bowels must be kept free and open, and the patient should drink very freely of water, either hot or cold, according to desire. As soon as the more severe symptoms subside, the patient should continue with the general regimen advised on page 2232 of Volume IV, including the Physcultopathic treatment and exercise referred to there. By following these methods, it is only in the most exceptional cases that the disease can progress so far as to require surgical assistance. If this treatment is adopted early enough, then it is safe to say that one need never resort to surgery, under any circumstances. If necessary, then the above regimen will put the patient in a condition the better to endure the operation, and to recover from it more quickly.

FEMALE WEAKNESS.—A general term applied to various disorders of women, sometimes to *Leucorrhea* (which see), and especially to prolapsus of the womb and other displacements. (See *Womb, Displacements of.*)

FLOODING.—See *Menstruation, Profuse.*

FLOWING BETWEEN PERIODS.—See *Metrorrhagia* under *Menstruation, Profuse.*

GONORRHEA IN WOMEN.—See *Vaginitis.*

GREEN SICKNESS.—See *Chlorosis,* also *Anemia,* in Vol IV.

HEMORRHAGE OF WOMB.—See *Menstruation, Profuse.*

HERNIA.—See *Rupture.*

HYSTEROCELE.—See *Womb, Displacements of.*

INVERSION.—See *Womb, Displacements of.*

IRREGULARITY.—See *Irregular Menstruation* under *Menstruation, Profuse,* also *Menstruation, Absence of.*

LEUCORRHEA.—(Whites.) This is a catarrhal discharge, milk-like in character, from the mucous membrane of the vagina. It is not altogether unlike catarrhal conditions of mucous membranes of the nose and throat or other parts, and is perhaps to be regarded not so much as a disease in itself as a symptom of an unsatisfactory constitutional condition. It is a most stubborn and annoying symptom, baffling the efforts of medical science to overcome it, but yielding to physical culture methods which have for their object the purification of the blood and the invigoration of the entire organism. Even then, however, it may sometimes take some time, in deeply rooted and long established cases, to eradicate from the affected parts the tendency to form this discharge.

The name of "Whites," often applied, is somewhat erroneous, since the discharge is sometimes yellow or a greenish yellow. There are really four forms of discharge from the vagina, mucus, pus, mucus and pus combined, and a watery variety. Mucus does not imply inflammation, and may possibly be derived from the kidneys or bladder, through the urethra, instead of coming from the vagina. Pus, however, positively indicates inflammation, for it can be produced from no other cause. If the discharge is thin or watery, or thick and cream-like, it is quite certain that it is from the vagina. If ropy, gluey or albuminous like the white of an egg, the discharge is probably from the cavity of the neck of the womb.

Treatment. Aside from the strictest cleanliness, and the necessity for building strength and vigor of the entire body by means of exercise, the all important requirement for the treatment of leucorrhea is constitutional treatment for purifying the blood. A complete routine of treatment and diet for this purpose is given in Volume IV, p. 2384.

MENOPAUSE.—(Change or Turn of Life.) This is not really a diseased condition, though in some cases a rather critical period and one in which any predisposition to disease or tendency toward congestion of an organ is more likely to make itself felt than during the preceding periods of life. The organism of a woman has been accustomed for some thirty years to lose a certain amount of blood every four weeks, and at the cessation of this habitual condition it need not be surprising if various disturbances of the system arise. Tendencies to cancer, heretofore concealed, are more likely to make themselves known at just this time. However, tendencies of this kind really consist in a lack of vital resistance and a condition of impure blood, so that proper care of the health and a general vitality-building regimen suited to the needs of the individual will enable any woman to pass through this climax without fear and without any serious developments.

This is a natural period to pass through, and the common alarm or anxiety is not justifiable if one lives in such a way as to maintain good health.

A routine of treatment is not necessary here, inasmuch as the suggestions for the general care of the body and the health given in the preceding chapter, in the discussion of the Menopause (which see), will answer all requirements.

MENORRHAGIA.—See *Menstruation, Profuse.*

MENSTRUATION, DISORDERS OF.—See *Menopause; Menstruation, Absence of* (Amenorrhea); *Menstruation, Painful* (Dysmenorrhea); *Menstruation, Profuse* (Menorrhagia); *Menstruation, Retained* and *Menstruation, Suppressed*, all in this chapter. Also *Menstruation* in Volume IV, pp. 2190-93.

MENSTRUAL MANIA.—A form of temporary mania occurring at the menstrual period, in which there seems to be more or less hysteria and sometimes even suicidal or homicidal impulses. It is chiefly a nervous disturbance rather than a true mental derangement, and should be treated with cold packs to the head and upper spine and hot applications to the feet and hips. A hot foot-bath is suggested with simultaneous cold packs to the head and neck. Outdoor air is invaluable, as well as fasting, free water drinking and an enema to insure freedom of the bowels. Beyond this, the suggestions for Painful Menstruation will apply.

MENSTRUATION, ABSENCE OF.—(Amenorrhea.) Absence of the menstrual flow is classified as *primary* in those cases in which it has never appeared, and as *secondary* in those instances in which it has been established and is later absent or suppressed. Secondary amenorrhea may be the result either of retention or suppression of the flow. (See *Menstruation, Retained* and *Menstruation, Suppressed.*) Or the cessation of the flow for a few months may be brought about by very natural physiological reasons, as explained in Volume IV, on pages 2190 and 2191 (which see). All that is necessary in such a case is to build up the vitality and general health of the body by all physical culture measures.

Primary amenorrhea, or the condition in which the flow has never appeared, may be the result of an imperfect or arrested development of the generative system, or even to the absence of the ovaries or womb, and in such a case the breasts will fail to develop, the normal fullness and roundness of the body will be lacking and the other indications of well-sexed womanhood will fail to manifest themselves. When caused by imperfect development, the only possible treatment is care of the general health, outdoor life, freedom from study or other mental strain, plenty of enjoyable exercise and every opportunity and assistance in building vitality by the natural methods taught in these volumes.

It should be remembered that some young women commence to menstruate much later than others, and if the health is good and the body generally vigorous, no alarm should be felt if the function is delayed even until the age of seventeen or more. It is really to one's advantage to postpone ovulation by a natural life, freedom from excitement and stimulating influences, and plenty of outdoor exercise. It sometimes happens in young girls, just at puberty, that one or two menstrual periods are followed by a period of several months without further signs of it, but so long as they are active and well there is nothing to be alarmed about. However, if there seems to be a decline in health, with various distressing symptoms each month at the time when the flow would normally be expected, then it may be regarded as a true case of suppression. (See *Menstruation, Suppressed.*)

MENSTRUATION, PAINFUL OR DIFFICULT.—(Dysmenorrhea.) Painful menstruation is a very common affliction, the majority of all women who have come under the debilitating influences of civilization and civilized clothing having suffered in this way at one time or another, while a great many of them suffer regularly and intensely at every period from puberty to the menopause.

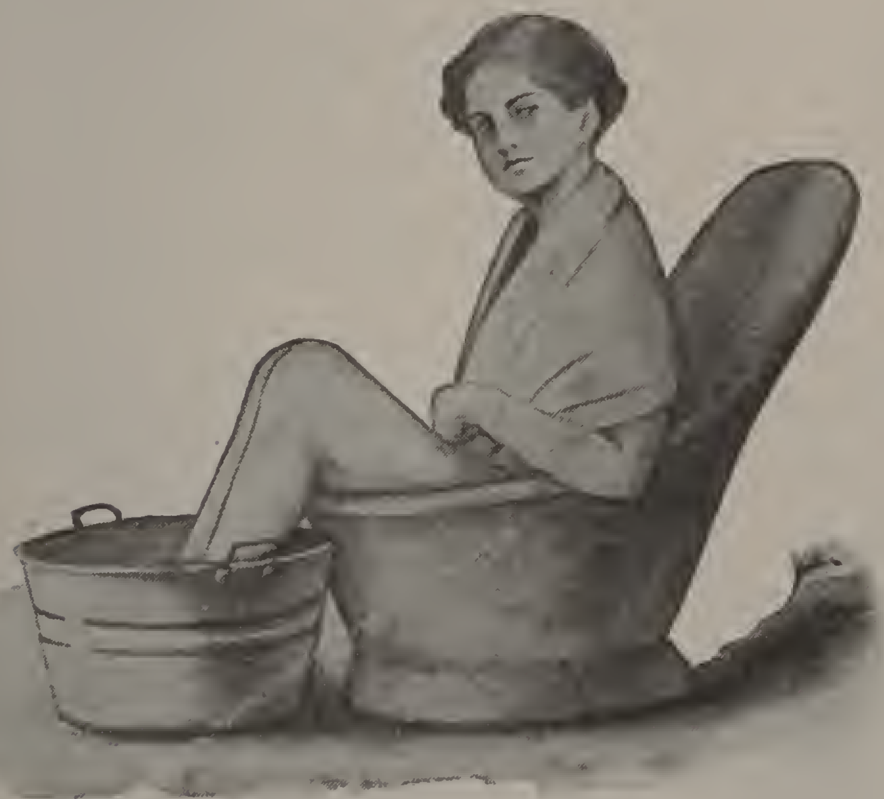
The causes of this disorder are in most cases constitutional in nature, growing out of the weakness and impure blood of the victim. Many cases are undoubtedly of nervous origin, neuralgic in character, or due to a generally run down condition. Improper carriage, poor circulation, malnutrition, confinement indoors, lack of exercise and other unhealthful conditions are all factors in a great many cases. Improper clothing and corsets should be given a large share of the blame in perhaps the majority of instances, not only because of their generally debilitating influence, but because of the abnormal pressure upon the parts, causing congestion and inflammation, and the misplacements of the womb which they are often chiefly instrumental in bringing about. These displacements, particularly anteflexion and retroflexion, are conspicuous causes of painful menstruation in many cases, inasmuch as the bending of the womb tends to obstruct the cervical canal, thus interfering with the flow and causing great distress. Some cases seem to be rheumatic in character. Exposure to cold is often said to be the chief cause of pain in menstruation, but this is hardly true in most cases because the victim usually suffers irrespective of catching cold. However, exposure and similar influences might cause trouble if they gave rise to or aggravated inflammations of the generative system, just as sexual excesses may contribute to the same result by weakening, irritating and lowering the tonicity of the parts. Inflammatory conditions of any parts of the generative system, from the ovaries down, as well as ulceration, will cause much suffering in menstruation. For instance, when the neck of the womb is almost closed by inflammation and swelling, all these parts, already tender and sore, are still more congested by the increased flow of blood, and the suffering is intense.

There is a peculiar variety of painful menstruation known as membranous dysmenorrhea, in which pieces or shreds of membrane are thrown off in the flow by means of expulsive contractions not unlike labor pains. These bearing down pains, which are very severe and followed by intervals of comparative comfort, may be mistaken for a miscarriage. They may last from one to three or four days. This form of dysmenorrhea, however, is rare.

The nature of the pain may vary with different women. Those of nervous tendencies are most likely to suffer keenly, and with them the pain often takes on something of the character of neuralgia. Where there is much inflammation the pain may seem to centralize in the back. If the ovaries and tubes are diseased, the pain will center about them. If there is displacement, the pain will be felt chiefly in the womb.

Treatment. By way of immediate relief in painful menstruation there is nothing so effective as the hot sitz bath, 110 to 115 degrees Fahr. Hot hip packs may also be used, or even a hot foot-bath, and care should be taken to have the bowels open and free. A hot enema will serve this purpose and also give relief to the pain. In addition to these I would suggest a fast of from one to three days at the beginning of each menstrual period, to be commenced at the first sign of pain. The very free drinking of water at the same time, either hot or cold as desired, will be of great advantage. The feet and hands should be kept warm and exciting mental influences avoided. If it is possible to be out-of-doors most of the time, so much the better. The corset should at least be laid aside at this time, even if not always, and care should be taken to avoid pressure upon the body by clothing. Even the least pressure may make a great deal of difference. Remember that tight skirt bands, or skirts suspended from the waist, are sometimes as bad or worse than corsets. If the generative organs are subject to inflammation, the fast mentioned would advantageously be extended to perhaps a week.

A radical cure of this complaint, however, really depends upon constitutional treatment in the intervals between the periods, and the patient should then devote herself to exercises, including those illustrated in this chapter, to outdoor pastimes, if possible, walking at least always,



The cold sitz bath, taken in conjunction with a warm foot bath, the latter helping to maintain the circulation and assisting in recuperation in the case of one who is not strong enough to take an ordinary cold sitz bath. Cold sitz baths are of extreme value in building sexual vigor.

and all measures designed to increase the vigor of the body as a whole and to build up the nervous system. If generally run down, a special diet would be advisable, together with a general vitality-building regimen. (See *Vital Depletion,* Vol. IV, and suggestions on treatment in vital depletion in Vol. III, pp. 1714-17.) Continence is to be rigidly observed. Daily cold sitz baths between periods are wonderfully potent as a means of building vigor and improving the general pelvic circulation.

Remember that this trouble in nearly all cases depends primarily upon weakness and an unsatisfactory blood supply. The woman who is as strong as she ought to be in all parts, and who therefore has no displacements, who has pure blood, and therefore no inflammation, and who suffers from no mechanical obstruction, positively will not suffer at this period. This is the natural condition, even if unusual among civilized women. This fact is proven by the number of physical culture women who have no pain from one year to another, either from this or any other source, by the active "wash women," who, unhampered by the harnesses of fashion, experience little or no difficulty at their periods, and by the women of primitive tribes who live a natural life, and who, unclothed, not only experience no pain in connection with the monthly ovulation but even sometimes avoid any visible sign of the occurrence. So that the remedy lies in getting strong and vigorous and pure blooded.

If there is anteflexion or retroflexion, obviously contributing to or wholly causing the difficulty, such displacement should be remedied by the means described elsewhere in this chapter. And in rare cases, where there is a stricture of the neck of the womb, or some other mechanical obstruction, skillful dilatation of the cervix or other mechanical treatment may be necessary.

MENSTRUATION, PROFUSE.—(Menorrhagia.) By menorrhagia is usually meant excessive or prolonged bleeding at the monthly periods. It is invariably the immediate result of endometritis, or inflammation of the lining membrane of the womb (which see), though this may be associated with other conditions or disorders. For instance, a laceration of the neck of the womb by the use of instruments in childbirth, subinvolution (which see), a displacement, ulceration of the neck of the womb, or a cancer or fibroid tumor, disease of the ovaries and tubes, may be the cause or contributing cause in some cases. Similarly, enlargement of the womb following abortion or labor, the retention of parts of the placenta, or injuries due to the hurried and forced removal of the placenta, may be found to be the cause in some instances. But as a general thing this disorder is to be traced back to a condition of poor health and low vitality, so that it is chiefly constitutional treatment that is needed in most instances. This is illustrated in the early stages of consumption and other wasting diseases, which cause the blood to become so thin as to facilitate profuse bleeding, while later the absence of menstruation is noted as the result of almost utter lack of blood. Sedentary habits, lack of exercise, mental or physical strain, late hours, excitement, strenuous social duties and other debilitating influences contribute to the causes of this disorder. Exhausting sexual excesses are frequently a chief cause, rendering the organs sensitive and congested. Repeated child-bearing has been said to be the cause, which might be true of a weak woman, or one whose regular habits of life are unhygienic and not conducive to physical vigor, though we should say in a case like this that the improper mode of life was at fault, leaving the woman physically unfit for perfect motherhood. As a rule, we may say that it is the lowered vitality, the physical weakness and the impoverished, impure state of the blood which are responsible for menorrhagia, because they induce and make possible the inflammatory conditions and other disorders which seem to be the immediate causes.

There is sometimes a question as to just what constitutes menorrhagia, inasmuch as the normal menstrual flow of different individuals varies considerably. If in doubt about this it may be determined by the question as to whether there is any decline in health and energy on account of it, and also by the appearance of clots of blood. The normal flow does not coagulate because of the admixture of mucus, and it is only when there is an excess of blood over the mucus, as in profuse menstruation, that clots are formed.

Irregular menstruation, in which the periods arrive at too short intervals, may prove to be as much of a drain upon the constitution as an excessive or prolonged flow at the regular intervals of four weeks. The premature appearance of the periods is apparently due to what may be called ovarian abortions. It will be remembered that the ova mature normally at intervals of twenty-eight days, but when there is a lowered state of vitality the ovarian vesicles may be arrested in their development, failing to reach maturity, and abort. Nature is busy throwing them off at intervals of two or three weeks and consequently the menstrual flow appears at such irregular periods.

Metrorrhagia is the term applied to flowing between the regular menstrual periods. The causes of this disorder are identically the same as those which induce menorrhagia, chiefly weakness, a poor state of the blood, and the inflammations due to the latter. The treatment, likewise, must be similar.

Treatment. There are a very few exceptional cases in which a torn neck of the womb or some other unusual impairment may need special attention, as indicated in the list of causes above, but as a rule the chief and all-important thing to do is to adopt a radical course of constitutional treatment for building all-around bodily vigor and purifying the blood supply. A special regimen of diet and all-around treatment for this purpose is given in Volume IV, pp. 2191-92. Helpful suggestions in case of serious uterine hemorrhage will be found also under *Hemorrhage* in Vol. IV, pp. 2102-4. Remember, however, that a continent life is to be insisted upon if any material improvement is desired in this very weakening complaint.

Curetment is commonly resorted to by surgeons as a proposed cure for troubles of this kind, but it is inclined to cause irritation in all cases and is seldom satisfactory. It is commonly advised when there are foreign growths, diseased tissues or pieces of the placenta retained in the womb. In such cases there is a purulent discharge. But the use of a hot antiseptic douche is all that need be used in the way of local treatment in such cases, while Nature will take care of the rest of the curative and eliminative process if given a chance and assisted by fasting and the general constitutional treatment referred to in Volume IV. Physcultopathic Treatment E is especially valuable to be taken persistently in the intervals between the periods of flowing.

MENSTRUATION, RETAINED.—See also *Menstruation, Absence of,* and *Menstruation, Suppressed; Amenorrhea.* Retained menstruation is the result of some mechanical obstruction or impediment which prevents its outlet, and is to be thus distinguished from Suppressed or Absent Menstruation (both of which see). Retention may be the result of an imperforated hymen, a closing up of the mouth of the womb, a constriction of the neck of this organ, obstruction in the cervical canal through anteflexion or retroflexion of the womb, or adhesions of the walls of the vagina. There is a distended condition of the abdomen, with a sense of fullness and weight, sometimes even simulating pregnancy. Where there is anteflexion or retroflexion at the base of the trouble, the exercises and general methods of correcting these misplacements given elsewhere will perhaps be sufficient. In other cases the neck of the uterus must be dilated, the hymen perforated, or other surgical treatment may be necessary, according to the cause in each individual instance.

MENSTRUATION, SUPPRESSED.—(Amenorrhea.) See also *Menstruation, Absent, and Menstruation, Retained.* Suppression of the menses is most frequently the result of a constitutional condition, though it may in other cases be due to some disorder of the womb or ovaries. It is not uncommonly associated with such diseases as consumption, anemia, chlorosis, cancer, obesity and others characterized by greatly reduced vitality. Anything that reduces the quality or quantity of the blood may be an active cause, even great mental suffering. Suppression may follow serious, devitalizing fevers, like typhoid or pneumonia, or may be the result of insanity or diseases of the nervous system which deplete the nervous energies of the body. In women of weak resistance, who alone would naturally be the only ones subject to such a disorder, it may sometimes be induced by a chill during menstruation or just before; by wet, *cold* feet during the period (wet feet if *warm* would have no influence) or by sitting too long on damp, cold ground. One who has health and pure blood will not suffer under these circumstances, but the resulting congestion in a woman who is weak and has a poor circulation may really cause a great deal of trouble, just at this particular time. But when due to such immediate causes rather than to more deep-seated constitutional conditions, the matter of restoring the normal function of the organs is a very simple one indeed. A fright or other sudden nervous disturbance may cause suppression of the menses in some instances, though depending here also upon the constitutional strength and resisting power of the individual. Local conditions, such as inflammation of the organs, may also prove to be the active cause.

Symptoms. Many unpleasant general symptoms may accompany the suppression of the menses, usually including headache, pains in the back and limbs, languor and perhaps nausea. There may be flushing and feverishness, dizziness, or even impaired eyesight. Sometimes the pain will be of a neuralgic character in both the head and the womb, causing intense suffering.

Treatment. Every effort should be made to ascertain the exact cause in each individual case, remembering that constitutional conditions are usually at fault. If there is some general constitutional disease, such as those named, all attention should be given to eradicating the primary disease and building up the vitality of the body. Sometimes the trouble lies largely in the local inflammation due to exhaustive sexual excesses. An absolutely continent life is imperative.

In an acute case, or in other words, one in which the flow has been suddenly stopped, as by fright or a chill, the hot sitz bath is the most efficacious treatment, taken at a temperature of from 110 to 120 degrees Fahr., or as hot as the patient can endure comfortably, and prolonged for ten to twenty minutes or as long as one can take it without any weakening sensation. A hot hip pack, applied for a half hour or more, is a substitute, but the hot sitz bath, taken morning and evening, is more to be relied upon. This measure is also valuable where the menstruation is scanty, or seems to be partially suppressed. The free drinking of water, preferably hot, is recommended, together with a hot enema taken at some time of the day remote from the taking of the sitz baths. This will insure activity of the bowels, which is most important. If the patient has experienced a prolonged and rigorous chill, resulting in suppression, probably the best treatment would be an immediate full hot bath of ten to twenty minutes, at a temperature of from 105 to 112 degrees Fahr. The higher the temperature of the water the shorter the bath.

In chronic suppression, which has come about gradually, every effort should be made to improve the general health and the quality and quantity of the blood. If associated with obesity, I would certainly advise a fast of at least ten to twenty days, perhaps longer, using Fasting Regimen No. 2, but in practically all other cases I would recommend an exclusive milk diet, to follow a fast of a couple of days. (Milk Diet No. 32.) I would especially recommend an outdoor life, with outdoor sleeping, for the reduced vitality commonly associated with this condition requires radical health-building measures. The patient should get plenty of sunshine and should take air baths at convenient opportunities, only making sure that the body is sufficiently comfortable to have the hands and feet warm in the mean time. This question of warm extremities is a rather important one in this disorder, and should be especially considered in winter. Do not stay indoors on this account, but get out in the air and protect yourself from the cold, if necessary, by more bed covering or warmer clothes. Wear mittens, for instance, not five-fingered gloves, and special protection for the wrists and ankles. Walks are valuable at all times of the year.

In chronic suppression of the menses it often seems that

Nature makes an attempt at a certain time each month to restore the lost function, as indicated by special symptoms in the way of pains in the back and abdomen, a sense of weight or fullness, aching thighs and the like. The patient should take advantage of this critical time to apply vigorously the treatment above outlined for acute suppression, including hot drinks, hot sitz baths, hot enemas or hot foot-baths. Of course if the quantity of blood is very low these measures may be without results, and it will be necessary to continue with the general vitality-building regimen until the health is so improved that the courses will reappear normally.

METRITIS.—See *Womb, Inflammation of.*

METRORRHAGIA.—See under *Menstruation, Profuse.*

MILK-LEG.—See *Puerperal Fever,* Vol. IV, p. 2281.

MISCARRIAGE.—See Vol. IV, p. 2197 and Chapter V of this volume.

NYMPHOMANIA.—This is a condition characterized by a morbid and seemingly irresistible sexual desire, the excitement of the generative system dominating the thoughts and feelings of the individual to such an extent that her conduct toward the opposite sex is likely to be forward or more or less immodest in spite of her better judgment. In the majority of cases it is undoubtedly caused by more or less inflammation of the vulva or internal parts or by itching of the vulva. (See *Pruritus Vulvae* and *Vulvitis.*) In other instances there are other sources of irritation, constipation being among the most conspicuous of these.

Treatment should involve a very careful study to ascertain any possible causes. Constipation should be absolutely overcome by the methods described in Volume IV. (See treatment for Pruritus and for other inflammatory conditions on page 2533.) Constitutional measures for building up the nervous system are most important, including plenty of exercise, outdoor life and daily cold baths. The daily cold sitz bath is especially recommended, though when the symptoms of the disorder are most marked, or in other words, when the sexual impulses are the strongest, cold wet packs to the upper spine will have a splendidly inhibiting effect. A non-stimulating diet should be adopted, and the sufferer should pay special attention to the discussion of Sexual Hygiene and of Mental Attitude in Chapter II of this volume.

Oöphoritis.—See *Ovaries, Inflammation of.*

Ovaries, Inflammation of.—(Ovaritis; Oöphoritis.) Inflammation of the ovaries may be either acute or chronic.

Acute ovaritis may be the result of gonorrheal infection, blood-poisoning after childbirth, or any inflammation traveling up from diseased Fallopian tubes or an inflamed womb. (See *Fallopian Tubes, Inflammation of.*) Or it may arise through chronic ovarian trouble or disordered menstruation. Remember that all the female generative system is much congested during normal menstruation, this amounting almost to inflammation. This condition may be easily exaggerated by a sudden and prolonged chill, if one is in a weakened condition, or even by wet feet, though these conditions will have no effect upon one in good health. Alcoholic beverages, sexual excesses or roughness in coition may cause ovarian inflammation. Special attention should always be given to chronic inflammation of the ovaries at the time or during the approach of the menopause or change of life, for when the condition is not relieved by the accustomed flow congestion may ensue.

Sexual excitement through the reading of exciting, erotic novels, mental suggestion from evil associates, lascivious dancing, an inactive life of voluptuous self-indulgence, or highly stimulating foods may create burning desires which, when not appeased, give rise to congestions that lead to this center of the sexual system. (See references to *Sexual Hygiene* and *Mental Attitude* in Chapter II of this volume.) Inflammation of the ovaries is likewise a natural result of suppression of the menses, which causes an engorged state of the vessels. It may also be a result of mechanical irritation from the pressure of a displaced womb, or the use of pessaries.

Chronic inflammation of the ovaries may be the result of sexual excesses or any of the above listed causes, or may be the outgrowth of an acute attack.

Symptoms. The first and most important symptom is pain to the right or left of the womb, with a sense of heat, the pain being greatly increased upon pressure or exertion. The pain is of a dull, dragging nature, sometimes intermittent, sometimes constant, often passing down to the loins and thighs. In chronic ovaritis the pain is much more severe before the menstrual period, though being usually relieved by the free flow. Standing erect, or straightening the thigh, may greatly increase the pain. In an acute attack there may be nausea and vomiting, with a rise of temperature and more rapid pulse. The ovaries become enlarged and hardened and utter destruction may be the result if not relieved, cutting off all hope of bearing children.

Treatment. In a severe attack an absolute fast is essential, drinking freely of water. All pressure from corsets, tight skirt bands or from any other cause must be avoided. While pain is severe lie down, using hot abdominal packs. It is very important to keep the bowels free, and hot enemas, while serving this purpose, will also prove soothing to the pain. See also general regimen of treatment and diet in Volume IV, pp. 2230-33.

In the treatment of chronic ovaritis, in connection with the regimen just mentioned, strict continence is most important, as well as avoiding all sources of erotic mental suggestion. Great care should be taken to avoid pressure by clothing, suspending all garments from the shoulders. Care should be used to maintain a correct posture while standing, so that there will be no sagging down of any part of the body to cause pressure. (See *Carriage,* Vol. II, pp. 998-1005.) Such exercise as may be indulged in without aggravating the pain should be taken regularly. If the trouble is apparently due to any displacement of the womb, or aggravated by the same, this should receive attention according to treatment outlined elsewhere in this chapter.

OVARIES, TUMORS OF.—See Volume IV, p. 2231.

PREMATURE DELIVERY.—See Chapter V of this volume.

PROLAPSUS.—See *Womb, Displacements of.*

Pessary.—See *Tampon.*

Pruritus.—Intense itching of the external genitals is known as Pruritus, and is often an accompaniment of Vulvitis, (which see). It is usually the result of unwholesome discharges from diseased internal organs or of uncleanliness.

Treatment should first of all remove the cause, whether this be uncleanliness, or disease of the internal generative organs. Boric acid is suggested as a mild and yet effective cleansing agent, to be used frequently if necessary. If there is any decided or persistent inflammation, this should have attention. (See *Vulvitis.*) In every case the urine should be analyzed and in the event of sugar being present, the treatment for diabetes instituted.

Puerperal Fever.—See Vol. IV, p. 2281.

Retroflexion.—See *Womb, Displacements of.*

Retroversion.—See *Womb, Displacements of.*

Rupture.—See Chapter VIII of this volume, also p. 2299 in Vol. IV.

For *Hernia of the Womb,* see *Womb, Displacements of.*

Salpingitis.—See *Fallopian Tubes, Inflammation of.*

Sexual Desire, Lack of.—This may be due to a number of combined causes. Corsets, which compress and cramp the vital organs, are largely responsible for this condition. Overeating, with its accompanying auto-intoxication and nerve-deadening effects, is another cause. Exercises of all the muscles of the trunk are to be recommended. Cold sitz baths are beneficial, and cool douches when these are otherwise advisable. One in superb health should be superbly sexed.

Sterility.—(Barrenness.) Sterility is the term applied to that condition of a woman which makes it impossible for conception to take place.

Sterility may be the result of the presence of tumors, either in the womb or protruding into the vagina, thus mechanically preventing conception. (See *Tumors.*) It is not at all uncommon for such tumors to be mistaken for pregnancy. It may be well to have an examination made by an expert.

There are cases in which the hymen, the membrane which naturally exists at the mouth of the vagina in virgins, is unbroken, perhaps requiring a simple operation.

Displacements of the womb may also cause sterility in a mechanical way, making entrance into the womb impossible. Likewise inflammation of the ovaries, womb or cervix may frustrate all attempts of the spermatozoa to impregnate the ovum. Profuse menstruation, hemorrhages and similar disturbances may bring about the same result.

Sterility is often a consequence of gonorrheal infection, as when the disease has extended into the Fallopian tubes and there given rise to such inflammation and swelling as to ultimately close up the very tiny passages. In many cases, also, the removal of the ovaries is only the result of their seeming to be hopelessly diseased with this infection. Gonorrhea is declared by competent authorities to be responsible for an extremely large proportion of all cases of involuntary sterility.

An organism in a low state of vitality, as when exhausted from neglect, overwork, or constitutional disease, may be for that reason incapable of conception.

Remember also that it is possible that the fault lies with the husband. If a woman is healthy and apparently normal, his condition should be made the subject of inquiry. In other words, the woman is not sterile at all in such cases, it being only apparent because that particular union is barren. It is estimated that the husband is at fault in perhaps one-fifth of all fruitless marriages.

Treatment. The above statement of the causes of sterility is in some instances sufficient to suggest the treatment. For instance, where displacements of the womb are the cause, reference is made to the treatment for the same elsewhere in this chapter. Where there is inflammation or other diseased conditions, they should be remedied. It is found that sterility or apparent sterility is overcome in many cases by simply living a consistent physical culture life and building up the vitality of the entire organism in the case of both man and woman.

It follows, also, that where the difficulty arises through the absence of the essential organs, through operations, for instance, the condition is incurable. If the Fallopian tubes have once been destroyed by disease in the manner referred to, sterility is inevitable.

SUBINVOLUTION.—The contraction of the womb after childbirth and return to its normal size and condition is known as *involution.* The process usually requires a period of six weeks, during which the organ is reduced from a weight of a couple of pounds to a couple of ounces, and from approximately a foot in length to two and a half inches.

Subinvolution is a condition in which this process has been arrested or interfered with, and the contraction is incomplete. It is ascertained by feeling the fundus of the organ through the wall of the abdomen, above the level of the pubic bones. There may also be more or less occasional bleeding, continuing perhaps for a few weeks. It may be the result of retained parts of the placenta, displacements of the organ. adhesions, premature resumption of sexual intercourse, inflammatory conditions, or fibroid tumors. It will be seen that most of these causes are not to be expected in the case of a really healthy woman, so that the trouble is not to be feared in normal cases. It is said to be due in some cases to premature rising from the childbirth bed, though the question as to just what is prematurity in this respect will depend upon the individual. Any woman of normal strength and muscular development need not be alarmed over the prospect, even if she does ignore the traditions about staying in bed a set length of time.

The treatment of subinvolution should be concerned with the particular cause of the condition in each case, so far as it can be ascertained. Strict continence is absolutely essential. Tendencies toward displacement should be corrected by the methods given elsewhere in this chapter. (See *Womb, Displacements of.*) Every possible means should be adopted to improve the general health. If there is inflammation, retained parts of the placenta, adhesions or other diseased conditions present, a fast of from five to ten days will invariably set matters right, observing Fasting Regimen No. 2, and using Breaking-Fast Regimen No. 17 thereafter, preferably with the milk diet. Cold hip packs are also suggested.

Superinvolution is a condition in which involution is excessive, resulting in extreme atrophy of the womb. It is rare. The treatment should be chiefly constitutional.

SUPERFŒTATION.—See Chapter V of this volume.

SYPHILIS.—This terrible disease is discussed in detail in Chapter VIII of this volume. It should receive the same blood-purifying treatment in women as in men. Mild antiseptic vaginal douches of corrosive sublimate may be suggested, one tablet to a quart of water.

THE TAMPON.—Although, as a rule, surgical appliances are not to be universally commended, it will often be found that much relief may be secured in displacements and disorders peculiar to women by means of the tampon, in the hands of a qualified and dependable practitioner. This appliance consists of a tightly rolled wad of absorbent cotton saturated with a mixture of glycerin and boric acid or some astringent, and when introduced into the vagina in proper fashion it supports the weakened parts and is capable of at least temporarily restoring the parts to normal condition. This is also true of the *pessary.*

TUMOR.—*Ovarian,* see Vol. IV, pp. 2231, 2373. *Vaginal* or *Womb,* see Vol. IV, pp. 2373, 2384, 2387, 2403.

ULCERATION OF THE WOMB.—See *Womb, Inflammation of.*

UTERUS, DISORDERS OF.—See *Womb.*

VAGINA, DISORDERS OF.—*See Leucorrhea, Vaginitis,* and *Vulvo-Vaginitis,* in this chapter; also *Vagina, Diseases of,* Vol. IV, p. 2384.

VAGINITIS.—Inflammation of the vagina is usually secondary to inflammation of the womb or of the vulva, or to some other disease of surrounding parts.

When it is a primary disease it is usually due to gonorrhea, and requires a vigorous course of constitutional treatment. There is pain and a purulent discharge. The dietetic and general regimen given in Vol. IV, p. 2386, should be followed strictly. Aside from the inflammatory state of the vagina, the general pathological nature of gonorrhea is described in Chapter VIII (which see). Also see Vol. IV, p. 2076, for further details. Cleanliness is most important, with great care not to infect the sufferer's eyes or other members of the household.

Gonorrhea in women in many cases attacks the urethra rather than the vagina, but when infecting the latter may spread up through the lining membrane of the womb to the mucous membranes of the Fallopian tubes and to the ovaries, where, if not arrested, it may accomplish the destruction of these parts, and result in permanent sterility. (See *Fallopian Tubes, Inflammation of,* and *Ovaries, Inflammation of.*)

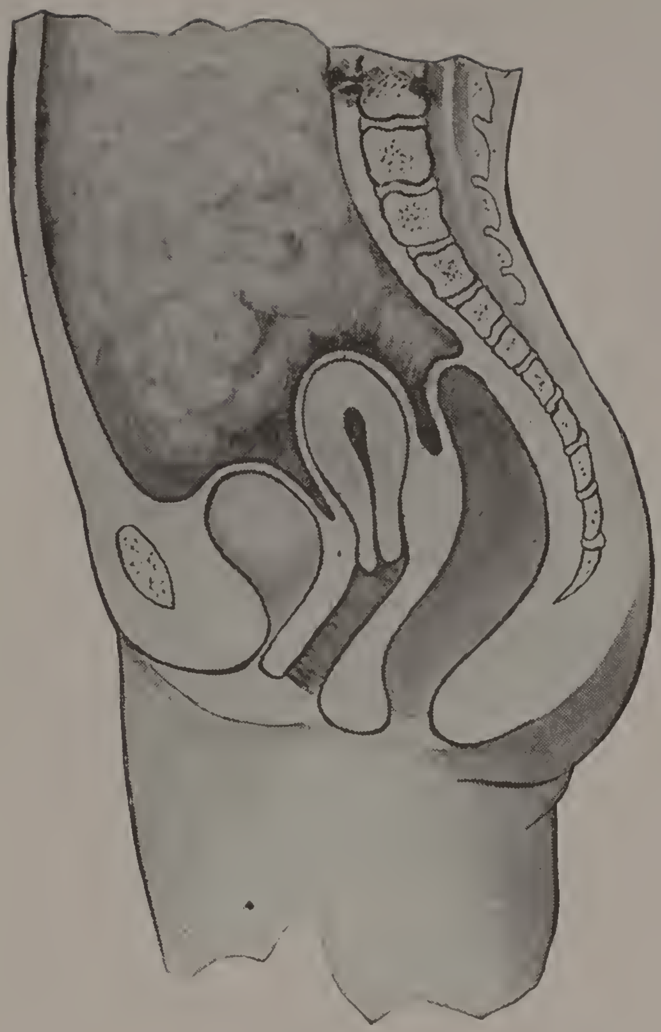
VULVITIS.—Inflammation of the vulva or external genitals, which is usually the result either of gonorrheal infection or local uncleanliness. There is redness, heat, swelling and pain which may extend to the groin. There may be a smarting discharge.

If the disease is due to gonorrheal infection, see *Vaginitis*, the treatment referred to there must be followed strictly here, together with great care to preserve cleanliness.

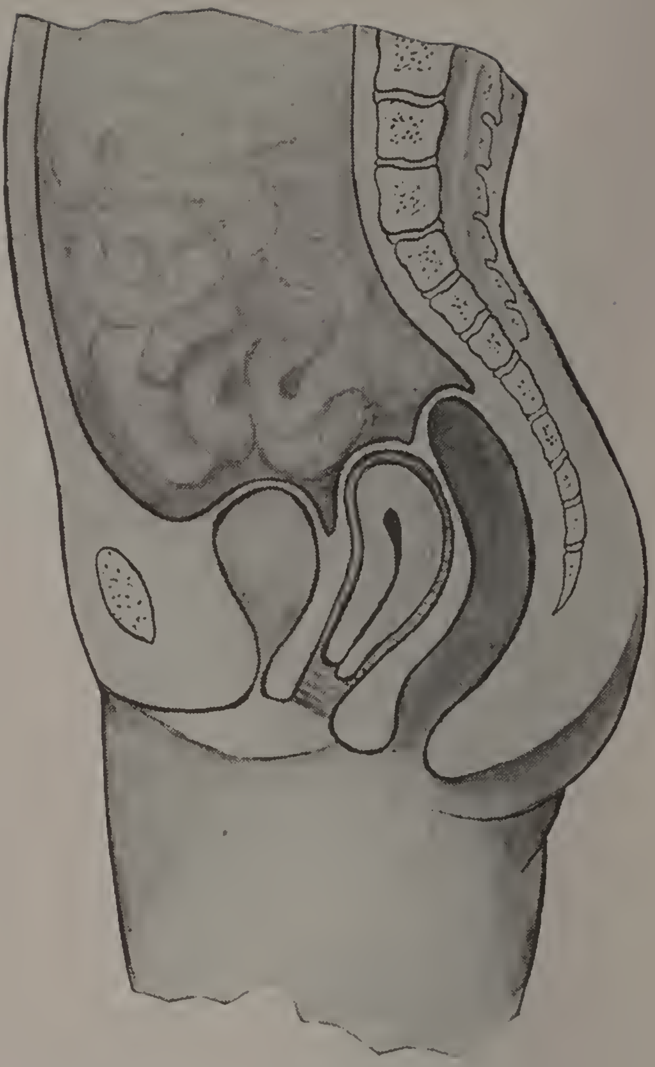
If vulvitis is the result of uncleanliness and the irritation produced by accumulations of impure or foreign matter, the treatment is a very simple matter, requiring absolute cleanliness and perhaps little else if the individual is in the best of health. A solution of boric acid is a good cleansing agent, the parts to be sponged frequently with this, using pieces of sterilized cotton and throwing them away as used. In most cases, however, constitutional treatment may be advisable to purify the blood-stream, using the regimen given for vaginitis on p. 2386 of Vol. IV. Local hot packs or hot sitz baths will be of value if there is much pain.

Vulvo-Vaginitis is a condition in which there is inflammation of both the vagina and the vulva, vaginitis and vulvitis often being associated. (See *Vaginitis* and *Vulvitis.*)

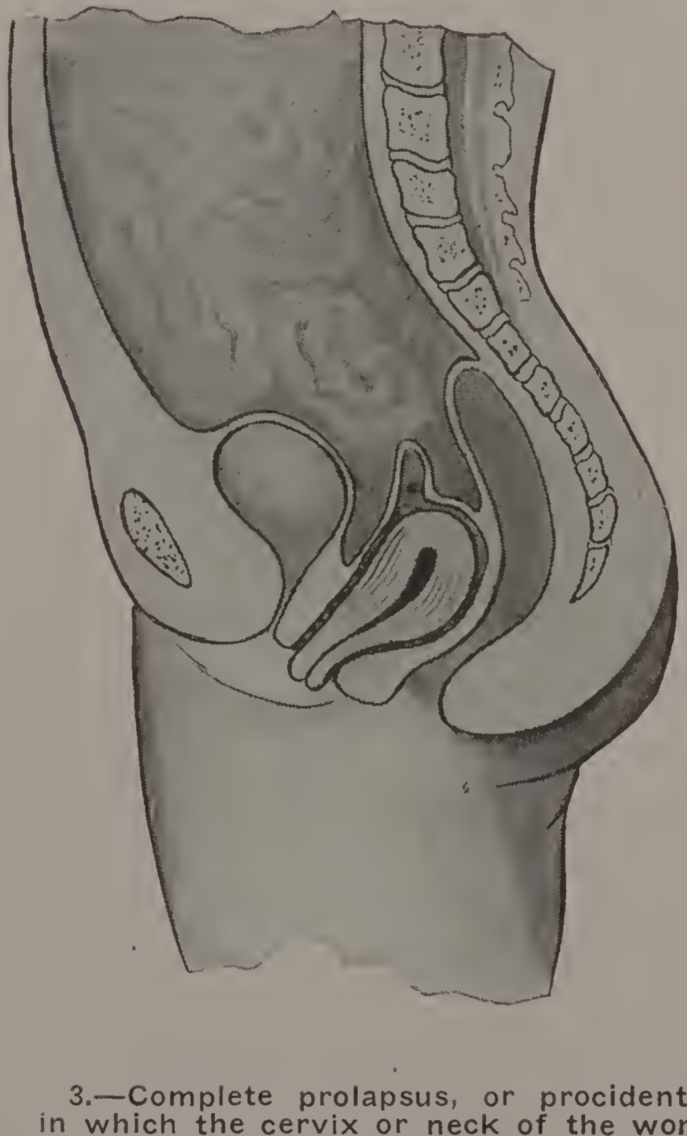
WHITES.—See *Leucorrhea.*



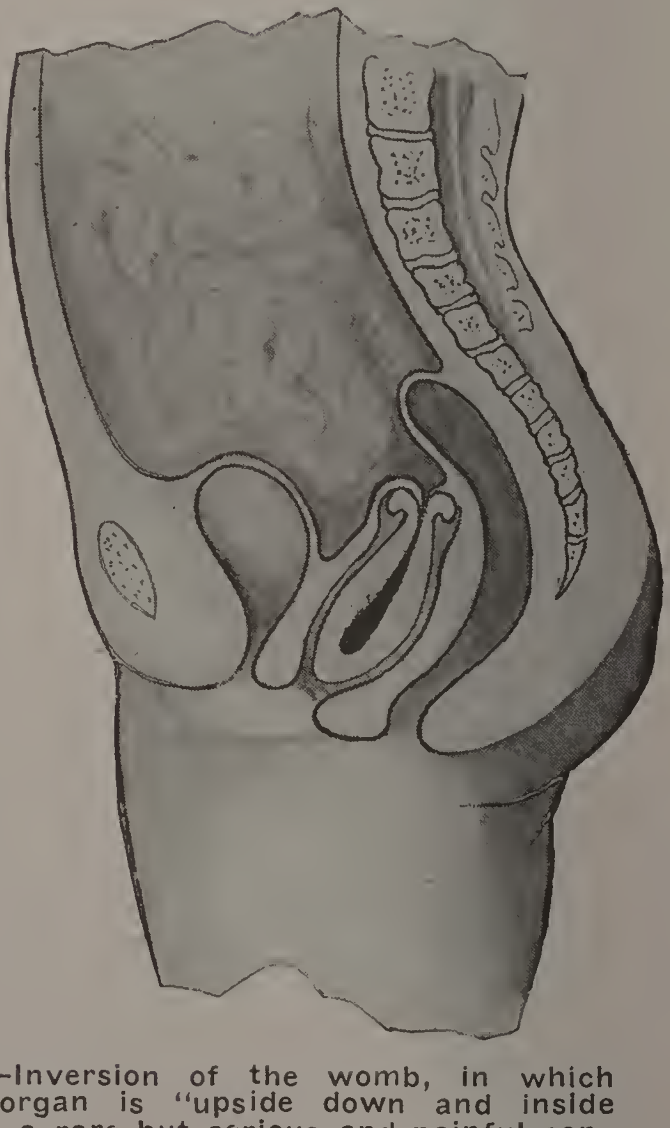
1.—Normal position of the womb, leaning slightly forward.



2.—Prolapsus, or falling of the womb, descending into the vagina.



3.—Complete prolapsus, or procidentia, in which the cervix or neck of the womb projects externally.

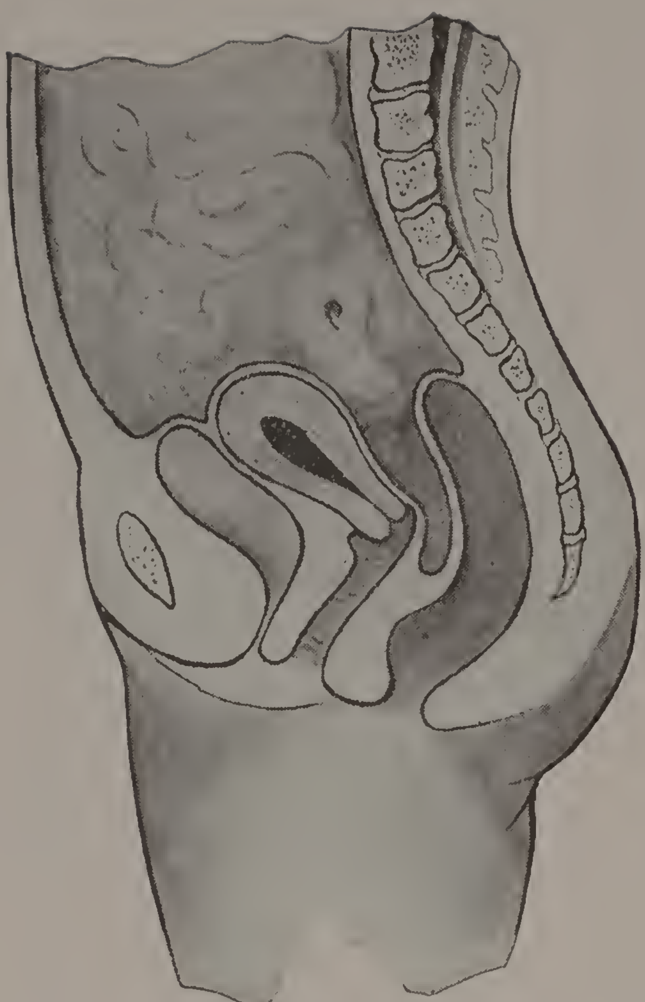


4.—Inversion of the womb, in which the organ is "upside down and inside out," a rare but serious and painful condition.

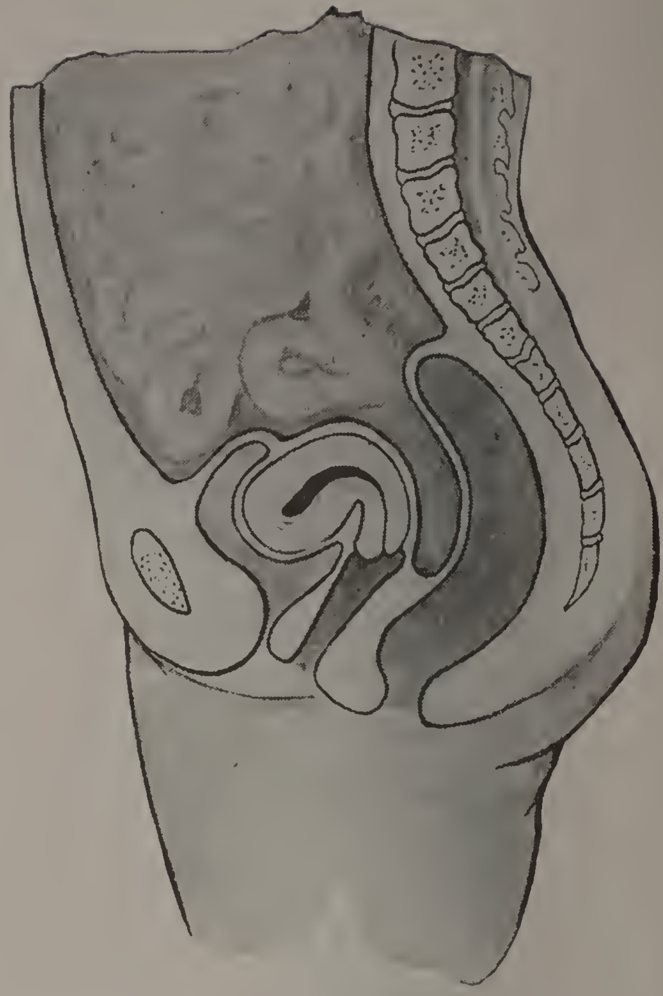
DISPLACEMENTS OF THE WOMB.

WOMB, DISPLACEMENTS OF.—Displacements of the womb are among the most common of all female troubles. It is not an uncommon notion that Nature was guilty of error in so placing the womb that it is only held up by soft tissues and therefore easily displaced. The truth is, however, that Nature has provided well enough in this respect, and that the error lies with the perverted mode of life upon the part of civilized women which has resulted in an unnatural state of weakness. It is this weakness which makes possible all of the displacements which we are considering. The womb is held in place by adequate ligaments, described in the preceding chapter, though in addition to these it has the support of the muscular structure of the vagina, and of all other tissues and muscles when they are in a state of firmness and general vigor. We thus see that bodily vigor is important for women, not merely on account of any desired strength of the external muscles, but because all phases of internal well-being likewise depend upon it.

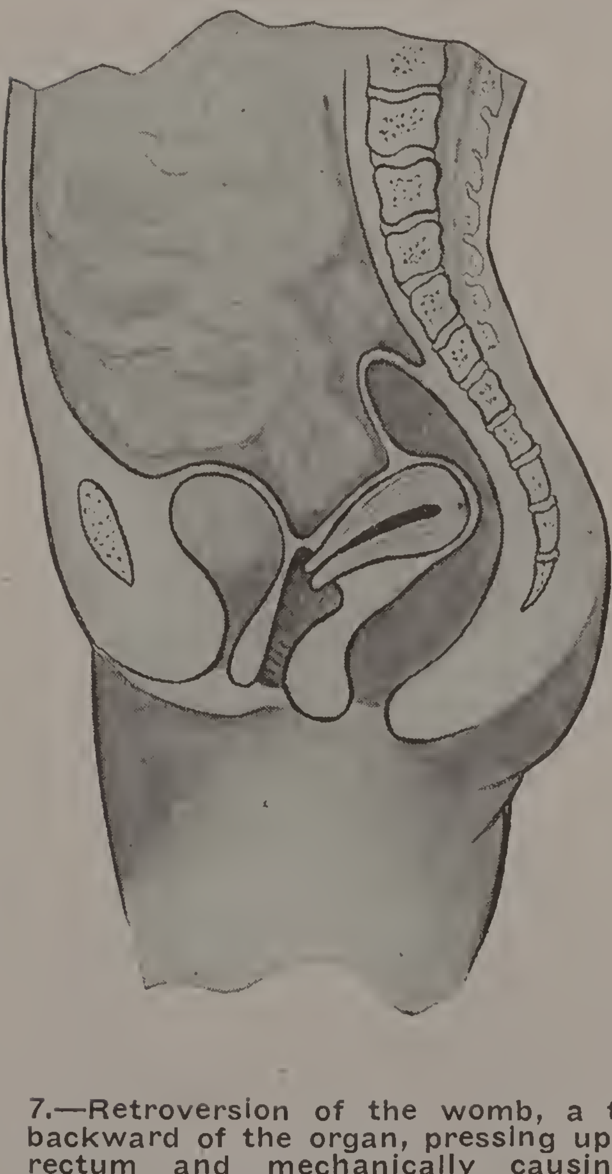
The causes of displacements of the womb may be said to be of two kinds, active and passive. The passive causes are of the kind that I have just mentioned, namely, such laxity and weakness of ligaments, muscles and adjacent organs as to make alterations of position possible, together with the impure or impoverished state of the blood which makes for lack of tone in all parts. Pure blood always makes for the highest degree of vigor and tonicity in all tissues. The active causes are pressure produced by corsets, tight skirt-bands, or heavy clothing hung from the waist, constipation, constant coughing, incorrect carriage of the body, violent straining as in lifting, or at stool, childbirth, as when the perineum or other parts are torn, and perhaps various accidents. Needless to say, the pressure from corsets or other errors of clothing is the most conspicuous of these active causes, and any attempt to remedy these various displacements requires a radical reform in the matter of dress. All clothing should be suspended from the shoulders, and the waist and abdomen left absolutely free from constriction of any kind. The



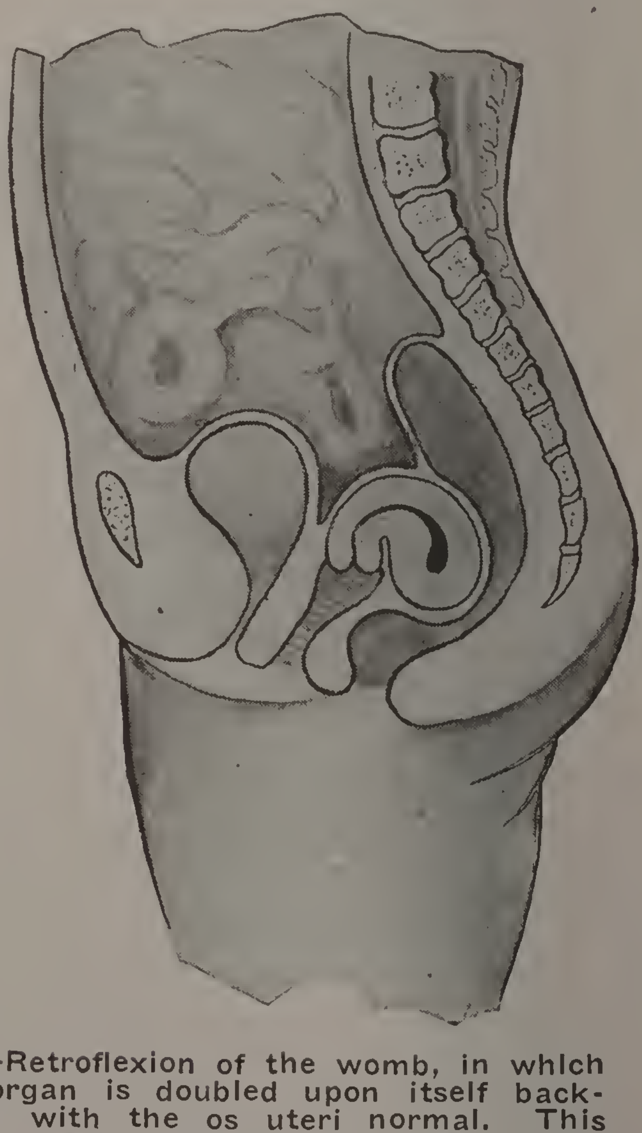
5.—Anteversion of the womb, a tipping forward of the organ, in which it presses upon the bladder, the mouth tipped backward.



6.—Anteflexion of the womb, in which it is bent double upon itself forward, also pressing upon the bladder, but with the mouth in a fairly normal position.



7.—Retroversion of the womb, a tipping backward of the organ, pressing upon the rectum and mechanically causing obstinate constipation. The os uteri or mouth is tipped forward.



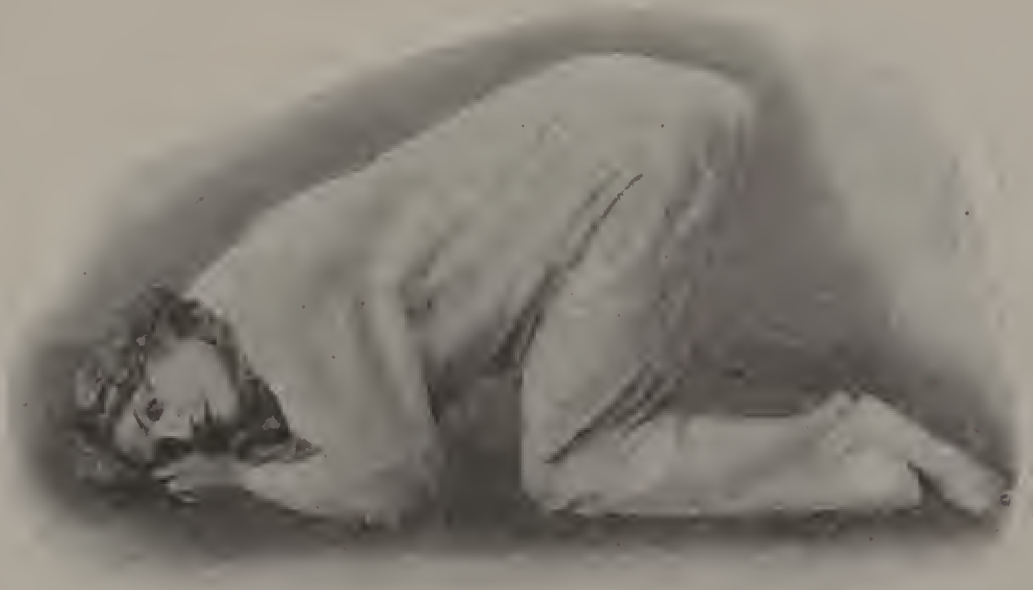
8.—Retroflexion of the womb, in which the organ is doubled upon itself backward, with the os uteri normal. This also causes pressure upon the rectum and serious, chronic constipation.

DISPLACEMENTS OF THE WOMB.

illustration on page 2510 shows the result of compression by the corset upon the abdominal organs, as compared with their normal position.

Prolapsus. (Falling of the Womb.) Prolapsus consists in the falling down of the womb into the vagina, as a result of the laxity and stretching of the ligaments, pressure, and perhaps the lack of normal support of the tissues underneath. It drops down between the bladder in front and the rectum behind, tending also to interfere with the latter by pressure. Naturally the ligaments are drawn down with it and still further stretched. Married women suffer more frequently with this complaint than unmarried. Sexual excesses, among other things, are inclined to weaken the muscular walls of the vagina, thus contributing to this condition. Childbirth may be a factor in inducing this complaint when the mother has been mutilated by instruments, when the perineum, for instance, is torn, or when the after-birth has been forcibly removed. It is often said that dancing, bicycle riding, excessive walking or standing will produce this result, especially when indulged in during the menstrual period when the womb is enlarged through congestion and much heavier, but this can only apply when the same condition of general weakness prevails which at any other time would predispose to the same complaint.

The degree of prolapsus depends on how far the organ has fallen. It may be only an inch or two, and in such an event may cause as much distress in one case as a greater degree of prolapse in some other woman. The patient will experi-



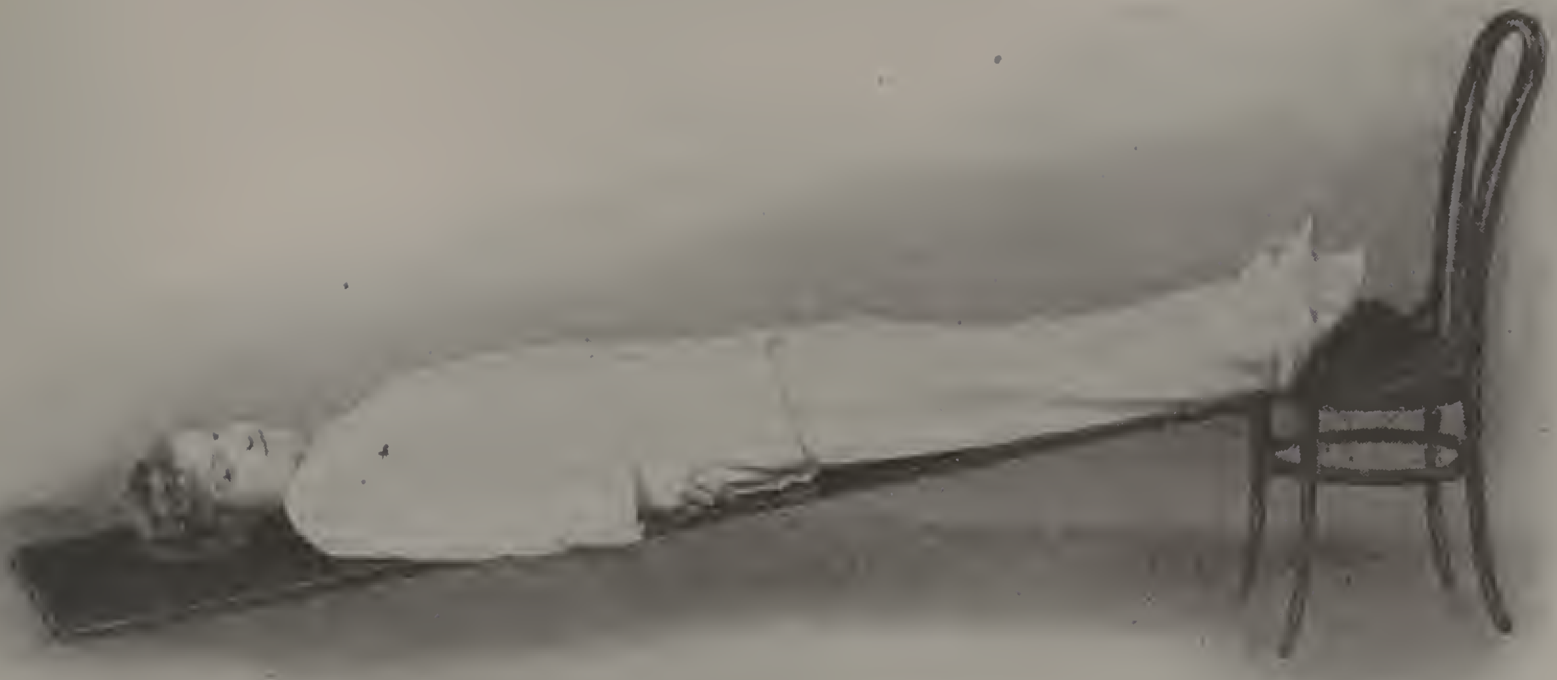
A beneficial position to assume in all cases of retroversion and retroflexion, in which case the womb will naturally tend to return to its normal position. It will also relieve strain and pressure in cases of prolapsus. It should be assumed for as long as comfortable.

ence a marked dragging sensation or sense of weight, together with pain in the small of the back and the lower part of the abdomen. These symptoms will be aggravated by long standing and perhaps by walking or other exertion, and may prove very weakening. The pressure of the organ against the bladder and the rectum may cause considerable difficulty in urination or evacuation.

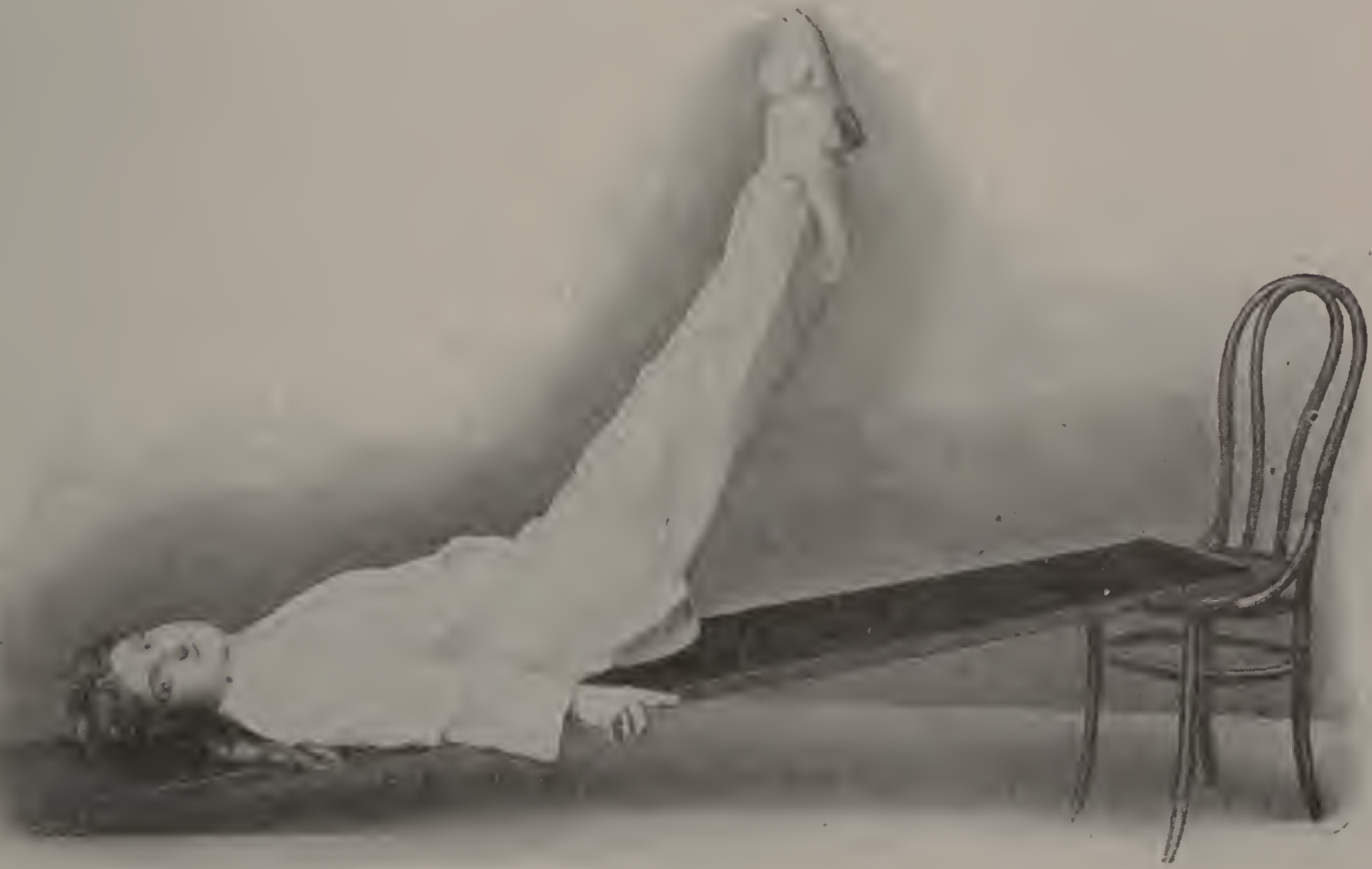
Complete Prolapsus or *Procidentia* is the extreme degree of prolapsus, in which the womb actually protrudes from the mouth of the vagina, naturally dragging down with it the walls of the vagina, the peritoneum and ligaments, and even occasionally pulling downward the bladder, to which it is attached by the two anterior ligaments. Complete prolapsus represents an extreme case of weakened tissues, the suffering is intense and the dragging down sensation may become unbearable. The prolapsed mouth of the womb often becomes ulcerated. Hemorrhage may result, and not infrequently it is impossible to prevent the urine from constantly dribbling.

Treatment of prolapsus must naturally consider the causes in each individual case, though always requiring measures for improving the general health and for building up a vigorous degree of strength in all of the muscles, ligaments, organs and tissues of the lower part of the body. In every case a reform in clothing is imperative, abandoning the corset and suspending all garments from the shoulders, unless such reforms have already been adopted. A continent life will be necessary until the vigor and tone of all parts have been restored. All tendencies toward constipation positively must be overcome. (See *Constipation,* Vol. IV, p. 1953.) In case of a badly torn perineum, following childbirth, which refuses to mend, surgical help may be necessary to sew together properly the lacerated parts.

In severe cases the sufferer may even have to remain off her feet, though this course is highly inadvisable if she can continue to be about and active without aggravating the trouble. If there is much prolapsus, and especially in complete prolapsus, it will be well to assist the womb back into



Exercises for Female Weaknesses. No. 1.—Showing an inclined surface upon which to take exercises of special value in correcting weaknesses of women. A large board, perhaps an ironing board (preferably padded and covered with cloth), may be placed with one end upon the floor, and the other end securely resting upon a chair, the side of a bed or other support. A cot could be used by elevating one end. The position shown here is a valuable resting position for relieving pressure upon the pelvic organs, when inflamed and congested, and especially for correcting falling of the womb. Also advised in anteversion and anteflexion. This is a beneficial resting position to give relief during painful menstruation, when the womb is congested, enlarged and heavier than at other times. It is also of great value to be assumed frequently during pregnancy, if there is an extreme sense of weight and bearing down.



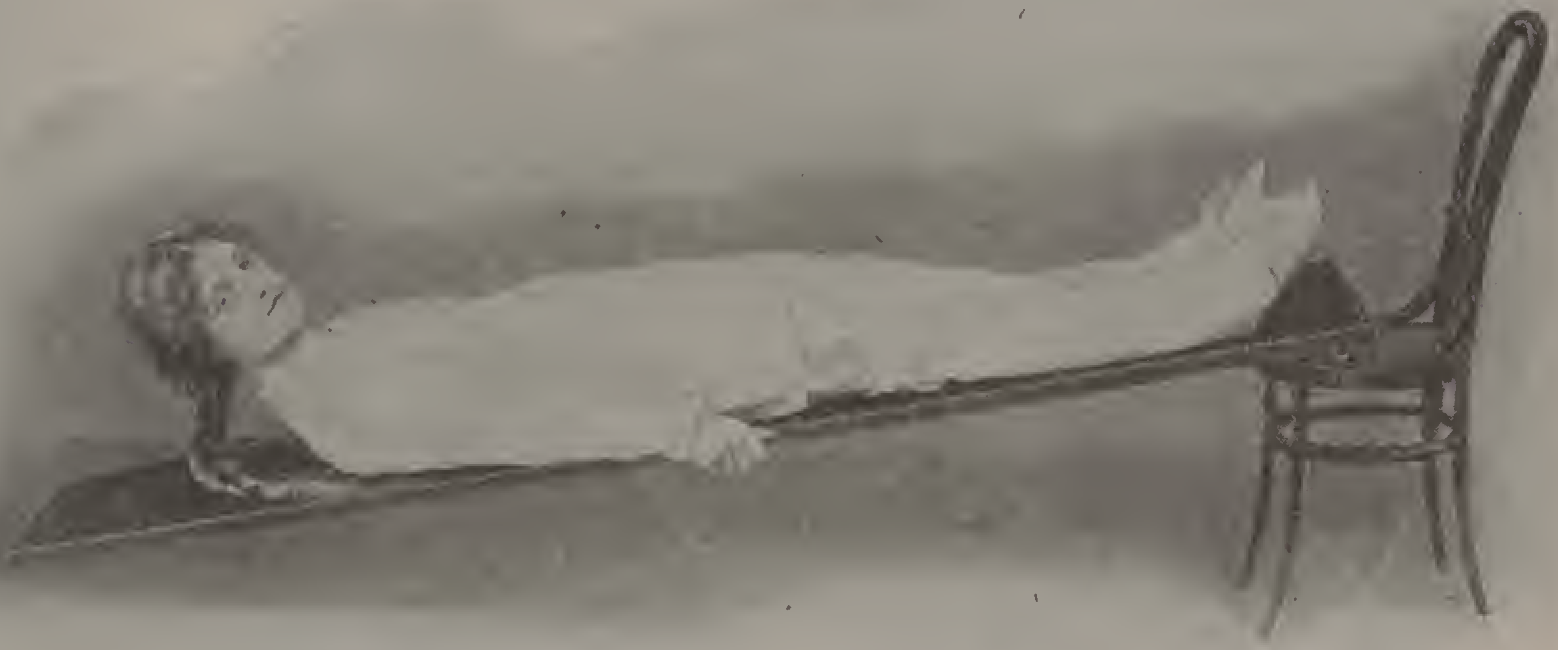
Exercises for Female Weaknesses. No. 2.—Grasping the board at both sides with the hands, and keeping the knees straight, lift the feet in the manner illustrated until the legs are perpendicular. If not strong, in the beginning one should lift one leg at a time. Repeat until only slightly tired. This exercise may be varied by bringing the legs apart when they are perpendicular and bringing them together again, repeating a number of times. These movements are valuable for building strength in the pelvic organs and abdominal muscles, and are especially beneficial in cases of anteversion, anteflexion and falling of the womb.

place while lying upon an inclined plane, with the head eight to twelve inches lower than the hips. Raising one end of a couch will accomplish this, though a very large ironing board, detached door or other convenient surface will answer perfectly. Such a board or other convenience should be provided for the sake of the special exercises illustrated in this chapter. It will be well to remain lying down in this inclined position for a half hour at a time, at the same time having cold hip packs applied. A daily cold sitz bath will also be advisable. (See Vol. III, p. 1480.) A vaginal injection of cold water may even be useful in some cases as a means of contracting the tissues and improving their tonicity.

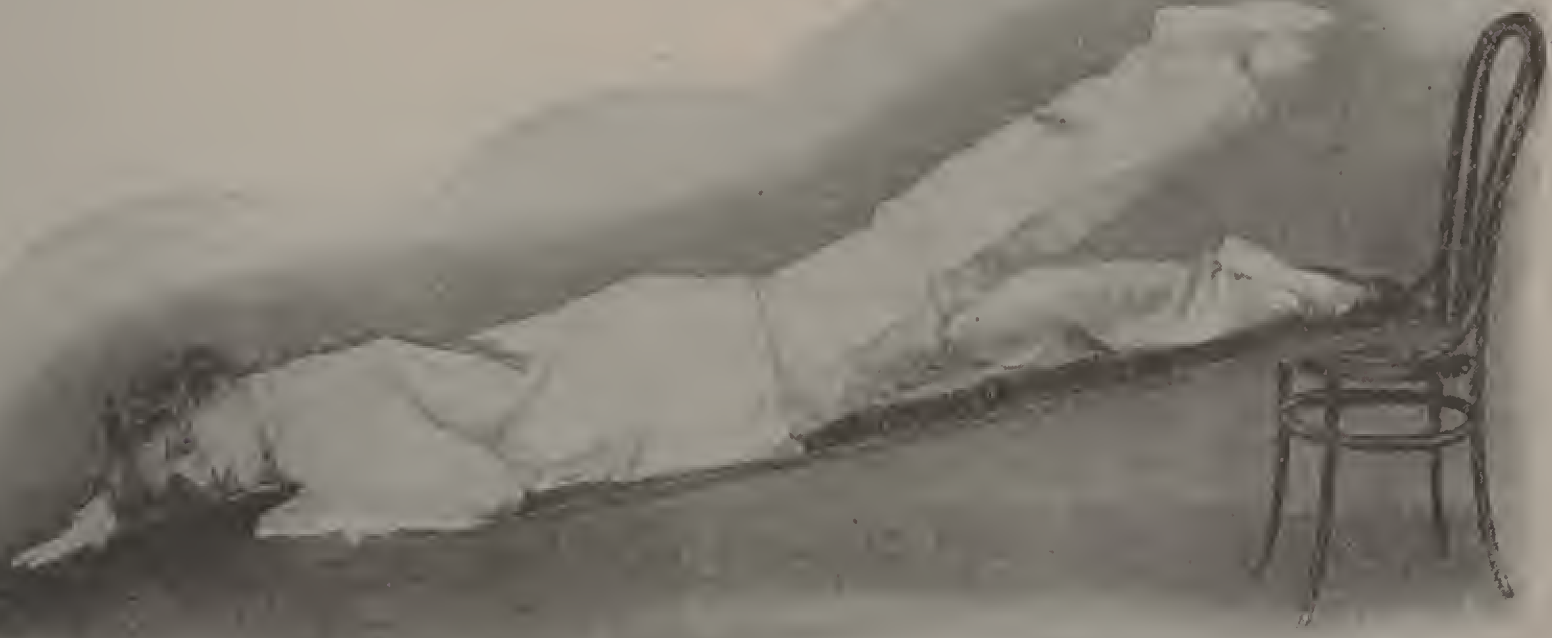
Artificial supports, pessaries and caustics, however, should never be used. Not only do they fail utterly to accomplish any real results, but they are to be rigidly condemned as preventing a natural improvement and as causing irritation, pain, leucorrhea and even ulceration.

Exercise is the most important active agent in the cure of prolapsus, and whatever else is done, this should not be neglected. The special system of exercises on an inclined surface, given in this chapter, should be practiced faithfully and persistently, together with such general exercises for women for strengthening the entire body as the reader will find in Volume II. If very weak, these exercises should be approached with caution at first, taking them up gradually and increasing the energy with which you execute them as you gain in strength. I say this not because you should fear these exercises, for they are not dangerous in any case, but because it is possible for the enthusiast to carry them too far the first day and because you may do better by taking them up gradually.

A fast is always of great advantage in commencing a course of treatment for prolapsus. It favors contraction of the tissues, and especially the building of strength in the new tissues that are formed after the fast. The fast also overcomes any inflammatory conditions or unwholesome discharges which may have tended to aggravate the trouble. In short,



Exercises for Female Weaknesses. No. 3.—Lying on the back with the head at the lower end of the incline, and taking hold of the sides of the board with the hands if desired, raise the head and shoulders a few inches from the board, but not high enough to strain. Relax and repeat until slightly tired. This is an ideal exercise for strengthening abdominal muscles and parts, and for overcoming weaknesses of women, especially in anteversion and falling of the womb, or in any congestion and inflammation in the pelvic region. As you grow much stronger you may comfortably raise the head and shoulders a little higher, and finally, when sufficiently vigorous, may raise the upper body to a perpendicular, or sitting position. The exercise may later be varied by twisting the upper body somewhat, first to one side and then to the other when raising the head and shoulders. It will be advantageous to hold the feet in place by the help of a strap or a rope.



Exercises for Female Weaknesses. No. 4.—Lying face downward upon the board, as illustrated, and keeping the knee straight, raise one leg as high as possible and repeat until slightly tired. Then perform the movement with the other leg. This exercise is especially valuable in retroversion and retroflexion of the womb.

much more rapid progress may be made in all cases if the plan of fasting in the beginning of treatment is adopted. (Fasting Regimen No. 2, and appropriate breaking-fast regimen.)

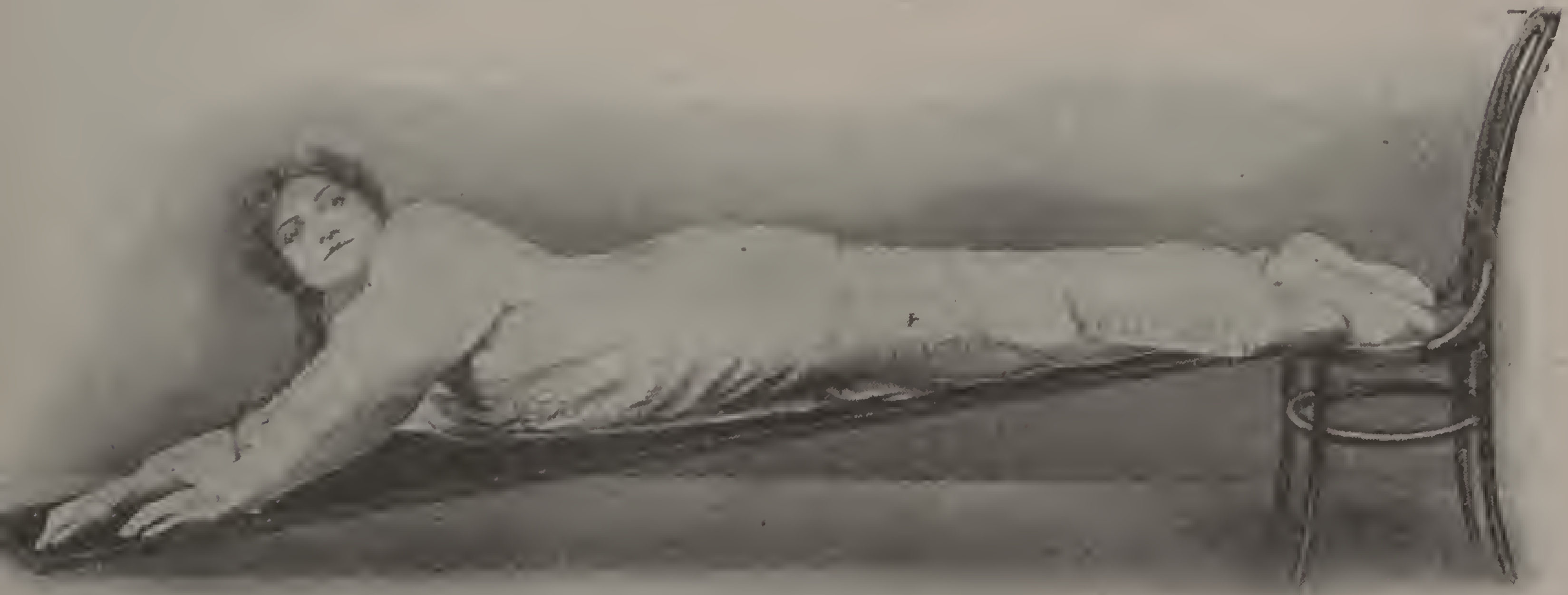
Inversion of the Womb. This is a condition in which the womb is upside down and turned inside out, not unlike a mitten or stocking which has been turned inside out. Naturally, the body of the organ descends into the vagina, though in a different way from that known in ordinary prolapsus. This condition, a very painful one, is comparatively rare. The causes are similar to those of prolapsus, and the treatment should be along the same lines. Assistance is required, however, in returning the womb to its proper place, this to be done while reclining on the back with the hips higher than the head.

Tipping and Bending of Womb. We have seen, in the preceding chapter, that the upper part of the womb, when in its normal position, inclines slightly forward. Tipping or bending of the organ forward or backward are common displacements.

Anteversion of the Womb. When the womb falls or is tipped forward beyond the normally slight forward incline, the condition is called anteversion. In this case the upper part rests or presses upon the bladder while the mouth of the womb is tipped backward toward the rectum even more than under normal circumstances. This pressure upon the bladder interferes with this organ seriously, causing irritation and great distress. There is a frequent or constant desire to urinate, with occasional inability to do so without the aid of a catheter.

Anteflexion of the Womb is a condition in which the organ is bent over upon itself, or doubled upon itself, in a forward direction, the fundus pressing upon and interfering with the bladder the same as in anteversion, though there may be little apparent change in the direction or position of the mouth of the womb. It is sometimes said to be caused by a state of congestion of the fundus, this part being then so much larger and heavier than usual that it bends over upon the cervix. This, however, is a doubtful cause in most instances, and certainly inoperative except where there is great weakness, the pressure of improper clothing and other influences being far more potent as a rule. It is said to be congenital in many cases, due to imperfect development of the generative system, but lack of exercise and defective muscular development are undoubtedly at fault in far more instances. Aside from interfering with the bladder, anteflexion may cause painful and difficult menstruation, in which the pain is expulsive in character and the discharge dark colored and clotted at first. Sterility is also caused mechanically in some cases by anteflexion, the obstruction in the interior of the womb caused by the bending of the organ making conception impossible.

Treatment of anteversion and anteflexion requires the use of proper clothing and the strengthening of all the abdominal organs and muscles. The position of lying on an inclined surface with the head lower than the hips is exceedingly beneficial in a case of either anteversion or anteflexion, and while in this position deep abdominal massage should be practiced. The exercises illustrated in this chapter, which are performed while lying upon a properly inclined board, should be faithfully and persistently practiced every day, but those executed face downward should be avoided. Daily cold sitz baths will



Exercises for Female Weaknesses. No. 3.—Lying face downward on inclined board, raise head and shoulders as illustrated, and then twist the body from the hips first to one side and then to the other until moderately tired. Do not strain, but let the exercise be a little more vigorous, raising the body a little higher, as you grow stronger. Valuable in a general way for remedying disorders of women, but especially in retroversion and retroflexion.

be of special advantage, while air baths, outdoor life, walks, a wholesome diet and all other means of invigorating the entire body should be made a daily practice.

Retroversion of the Womb is a tipping or falling over backward of the body of the organ, with the mouth turned forward—just the opposite of anteversion. By the pressure against the rectum caused by this condition, as apparent from the illustration, a most obstinate form of constipation is brought about. There are instances wherein this displacement comes about suddenly, as in a fall, strain or violent coughing, but most cases develop gradually, though in either event the predisposing cause is weakness and laxity of tissues.

Retroflexion occurs when the womb is bent or doubled upon itself, the mouth retaining its usual position, or very nearly that, while the body is bent backward, and occupies a position between the vagina and the rectum. Like retroversion, it causes serious and obstinate constipation by reason of mechanically obstructing the rectum. The causes are similar in nature to those which bring about retroversion. The fact that so many cases of retroflexion are said to have followed childbirth, through the increased size of the womb, irregular involution, relaxed ligaments and abdominal walls, indicates clearly enough the importance of strength and fit bodily condition in going through the crisis of motherhood.

In the case of either retroversion or retroflexion there is a constant dull, aching pain in the back, and perhaps headaches as well, a sense of weight in the rectum and the pelvis, which may seem to extend down the thighs, these symptoms usually being more pronounced before and during menstruation, which is always profuse and sometimes painful. There is usually leucorrhea. There are cases, however, in which a woman with retroflexion and even a torn vaginal floor goes through life with a far less intense degree of suffering than some other victim with a less degree of displacement.

Treatment. For the permanent cure of both retroflexion and retroversion it is necessary to avoid corsets and tight clothing, to build up the general health, and especially to strengthen all of the muscles, ligaments and tissues of the abdominal region. A splendid remedial measure is to take a position on knees and chest, so that the hips are considerably higher than the shoulders, this permitting the womb to return by its own weight to something like its normal forward and upward position. This position may be assumed and retained for a time two or three times each day, or even oftener. In addition to this, however, and of far greater importance, are some of the exercises on the inclined board illustrated in this chapter. Those suffering from retroversion and retroflexion should take only the movements which are executed face downward, at least for the first month or two of treatment. After that, if making satisfactory progress, those performed while lying on the back may be added, to be taken after the others. The exercises should be followed by a cold sitz bath.

A common treatment for these backward displacements is a surgical operation by means of which the top of the womb is brought forward and sewed to the rectus abdominis muscles in front. However, this is really a very unsatisfactory means of adjustment, since the fault lies with the weakness of the muscles, ligaments and tissues generally. Any form of treatment which does not consider the need of strengthening these must fail eventually.

Continence and the general scheme of treatment outlined above for prolapsus may be recommended, together with special attention directed to the relief of the constipation. It is true that ordinary treatment for the latter may not be wholly satisfactory so long as the mechanical obstruction by a backward displacement of the womb remains, but this is all the more reason why there should not be other contributing factors to cause constipation. Enemas may be of distinct value, taken in the knee-chest position described and illustrated in Vol. III, p. 1456. On account of this constipation, a fast may be of special advantage at first, or until the treatment begins to show effective results.

Obliquity of the womb is simply a moderate leaning of the organ forward, backward or to one side. It is quite common, and while not serious in itself, it should be corrected, if known, by the exercises and methods referred to, because it may be the beginning of a still greater displacement which will be serious.

Hernia of the Womb, or *Hysterocele,* is a rupture which contains the womb or a part of it. This is a very rare disorder and should be treated according to the instructions for the cure of *Rupture* in Vol. IV, p. 2299, though avoiding the more strenuous exercises suggested or taking care not to strain any part in executing them. The exercises for remedying displacements of the womb in this chapter are likewise of advantage in a case of this kind, but avoiding those taken face downward.

WOMB, INFLAMMATION OF.—(Metritis.) Inflammation of the womb may occur from various causes at any time during adult life. It may be brought on in some instances by chilling of the body or exposure to cold during the menstrual period, though only when the health and general circulation are poor, making one susceptible. It may be produced by emmenagogues (medicines intended to stimulate the menstrual flow), the use of irritants to produce abortion, the employment of violent purgatives for the latter purpose or for other reasons, the insertion of instruments and preventives, solitary vices or sexual over-indulgence. It may result from various displacements of the womb, the use of corsets or tight skirt bands, it may even be brought about sometimes by horseback riding, bicycle riding or dancing, though only when these commendable exercises are carried to great excess and the woman is physically weak and undeveloped. But along with these few special or immediate causes should be considered the numerous general and predisposing causes of all disease listed in Volume II of this work, including anything and everything that may tend to lower the vitality, weaken the body and impair the blood supply. Constipation is a prominent cause and an aggravation in many cases.

Inflammation of the womb may be limited to the lining membrane of the organ (endometrium), in which case it is called *Endometritis;* or it may be limited to the cervix or neck of the womb, and is then called *Cervicitis;* but it is practically all one and the same disease, and sooner or later may involve not only the mucous membrane but also the muscular structure of the organ itself (*Metritis*). Acute attacks are often followed by the chronic form of the disease.

Symptoms. An acute state of inflammation of the womb is often attended by chilliness, followed by fever. Faintness, nausea and vomiting are not infrequent. There is a sense of heat and uneasiness in the pelvic region, with sharp pains in the lower part of the back and in the right or left groin, perhaps darting down the thighs. Coughing or pressure upon the abdomen increases the pain greatly. The womb enlarges and is exceedingly tender to the touch, even through the abdomen; the vagina is hot and sensitive; and other adjacent parts are affected. There is leucorrhea, painful menstruation or hemorrhage from the womb. Evacuations from the bowels are painful and the bladder becomes sensitive, causing a constant desire to urinate, the act itself being painful. Headache is an almost constant symptom. In severe cases the tongue becomes coated and there are indications of general depression throughout the system. On examination, the womb is found hard and congested, while issuing from the mouth is usually seen a plug of mucus, which is either ropy or pus like.

Cervicitis may not only mean inflammation but also ulceration and enlargement of the neck of the womb. There is hardly any other disease more common among the female sex than inflammation of the cervix, and in a large percentage of cases it is either due to or aggravated by the irritation resulting from excessive intercourse. The neck of the womb when healthy is soft, smooth and of a pale rose color, the mouth being so well closed as to be just perceptible. When inflamed, the mouth is more or less open and the lips parted. The inflammation begins usually in the mucous membrane which covers the neck, and causes it to swell, its vessels filling with blood. If it extends to the body as well as the surface, the latter becomes hardened and enlarged, its increased size and weight causing it to descend somewhat lower in the vaginal cavity. In severe cases red or white pimples appear, signifying enlargements of glands with muco-pus. This inflammation, if not subdued, is soon followed by

Ulceration, spreading inward and upward. It may present itself in excoriations (raw places), granulations (pimply surfaces), or indurations (hardened parts). Sometimes the affected parts will be hard and red, or again soggy and bleeding at the slightest touch. A velvety feeling may now be noticed, which with the dilated mouth of the organ is a positive indication of this form of disease. A dull, aching pain is generally felt low down in the back, sometimes extending to the groins and thighs, with a bearing down sensation in the lower part of the abdomen.

The inflammatory state of the neck of the womb gives rise to much irritation of the nerves, and if the cause is not known is often falsely called neuralgia. An ulcerated condition causes more or less general disturbance of the entire system, partly perhaps because the nerves with which the womb is liberally supplied belong to those of the sympathetic system. Menstruation is generally more or less affected; it usually becomes more painful; in some instances it is more profuse; in others it may be scantier and irregular, postponed, protracted or abridged in its continuance. The stomach, which seems to be intimately connected with the womb through the sympathetic nerves, often suffers keenly, even to the extent of giving rise to the belief, in some instances, that this organ is the seat of the disease. Not only is the stomach disturbed, but also the liver, heart and other organs. Severe pains may be felt in the chest. The entire nervous system, indeed, is in a state of tension, creating irritability and what is generally known as "a case of nerves." It is a state of hypersensitiveness, which on the slightest occasion gives rise to tears and a hysterical state of mind. All of these symptoms, however, when due to this cause, will disappear as soon as the local affection is remedied.

Chronic Inflammation of the womb is a condition more common than the severe acute phases mentioned, though it often comes about as a result of improper treatment and the failure to cure the latter. In many cases its development is gradual and insidious, so that the patient may not at first realize that there is anything really serious the matter. It is more common among married women, and pain during coition is one of the first noticeable symptoms. Later there will be a dull pain in the lower part of the abdomen, a bearing down sensation, discomfort in evacuating the bowels or bladder, and perhaps a mucous discharge.

These inflammatory conditions, peculiar also to the ovaries, constitute a very large part of the female disorders, and are often the origin of symptoms recognized under the name of leucorrhea or "whites," amenorrhea or absence of menses, dysmenorrhea or painful menstruation, sterility and anemia, all of which see.

Treatment. Inflammation of the womb is such an exceedingly common disorder that it has been included in the list of general diseases contained in Volume IV, p. 2193, where, under the head of Metritis, its proper term, a detailed routine of treatment is given, with outline of diet, etc.

In severe cases of ulceration or acute inflammation it may be well to remain in bed, for long standing or even walking might prove irritating. Under such circumstances also, dancing, running a sewing machine, and other exertions are usually said to be detrimental, though the influence of these things in milder cases may depend largely upon the comparative strength or weakness of the patient. In many cases, and especially in chonic inflammation, special exercises and walking may be of great benefit.

In ulceration and severe acute inflammations, hot douches may be valuable instead of or in addition to the hot sitz baths suggested in Volume IV for reducing inflammation and soothing pain. They should be taken in a recumbent position, using plenty of previously boiled water at 110 to 120 degrees Fahr., or as hot as can be endured comfortably. Hot enemas are likewise soothing, and are recommended particularly if there is any tendency toward constipation. Constipation absolutely must not be permitted. If there is a high general fever, the entire body should be sponged with cool water, or a cold wet sheet pack should be given. (See Vol. III, p. 1496.)

However, these suggestions are chiefly of a palliative type, intended to give relief rather than being expected to bring about a radical cure. The latter requires treatment of a more fundamental character, including all constitutional measures which will serve to purify the blood and strengthen the organs and all adjacent parts. The regimen in Volume IV, therefore, is insisted upon, though inasmuch as inflammation is so often due to displacements of the womb, the exercises given elsewhere in this chapter for correcting such displacements may be necessary, executed carefully at first and gradually undertaken with greater vigor. Curetting, though much advocated by surgeons, is not advisable.

In addition to the regimen given on page 2194 of Volume IV, for chronic inflammation of the womb, I would advise strict continence, at least until all traces of the trouble have disappeared. Naturally this is understood in reference to acute inflammations.

CHAPTER V.

PREGNANCY AND CHILDBIRTH.

IT is a well-known fact that among the peasantry of Europe pregnant women continue at their work to the very time of their delivery and resume it a few hours after the child is born. Similar conditions prevail among the American Indians. Dr. George Wharton James, who for the past thirty years has been living in close touch with a number of the aboriginal tribes of the American South-West, says in his "What the White Race May Learn from the Indian": "Normal births with Indian women are practically painless and free from danger. I have known a woman to deliver herself of her child, sever the cord and then walk half a mile to the creek, walk into it with the baby, and give herself and the child a good washing, then return to her camp, suckle the little one, and proceed to attend to her duties as if nothing had happened. At another time I saw a woman, less than half an hour after her child was born, start off for a heavy load of wood. Their freedom from constricting waist-bands, their absolute freedom of body, their nasal and deep breathing, their muscular exercise through life, their open-air sleeping and living—all have much to do with these easy births."

To those familiar only with experiences of frail and feeble white women, these statements seem incredible, yet they are affirmed by the assertion of hundreds of missionaries and others, both in our own and foreign lands. Few aboriginal peoples suffer during childbirth, and it seems to be the especial curse of civilization that women shall be incapable of exercising, without pain or danger, the noble function of maternity.

But that even civilized women may be brought back into a normal condition in this regard is the testimony of hundreds of happy women who have followed closely the teachings of Physcultopathy. In the following chapter we shall attempt to give a short description of pregnancy and childbirth with an exposition of the principles of Physcultopathy as applied to this so important subject.

TABLE OF PREGNANCY

Indicating probable date of termination.

Commencement of Last Menstruation	Date of Birth	Commencement of Last Menstruation	Date of Birth
January 1	October 8	July 6	April 12
7	14	12	18
13	20	18	24
19	26	24	30
25	November 1	30	May 6
31	7	August 5	12
February 6	13	11	18
12	19	17	24
18	25	23	30
24	December 1	29	June 5
March 2	7	September 4	11
8	13	10	17
14	19	16	23
20	25	22	29
26	31	28	July 5
April 1	January 6	October 4	11
7	12	10	17
13	18	16	23
19	24	22	29
25	30	28	August 4
May 1	February 5	November 3	10
7	11	9	16
13	17	15	22
19	23	21	28
25	March 1	27	September 3
31	7	December 3	9
June 6	13	9	15
12	19	15	21
18	25	21	27
24	31	27	October 3
30	April 6		

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Abortion.—See *Miscarriage.*

"After-Pains."—Following expulsion of the placenta, so-called after-pains, due to the contraction of the uterus, are sometimes experienced. The application of hot dry cloths or the hot water bag will usually assuage these pains.

Age.—*Its Effect on Childbirth.* It is generally accepted as true that from twenty to forty years of age, constitute the best period of a woman's life for child-bearing. Those whose first child is born to them during the early twenties may apprehend somewhat less difficulty than those in whom the event occurs in later years.

While in many cases child-bearing between the age of thirty and the period of the menopause is attended with more difficulty and pain in the instance of the first child than in younger women, it is usually found that the danger to the mother of more mature years is not especially greater than that of younger women.

In women bearing their first child at a mature age it is particularly essential that they take advantage of every possible means of preparing for motherhood in the manner set forth in this volume.

Bathing During Pregnancy.—Cold baths (especially cold sitz baths) are of great value in the first three months in building vigor and functional tone, but in the later months they should be avoided. Some women might take them safely, but in other cases there is a risk. Cold baths, by their reflex nervous influence, tend to cause contractions of the womb, and might possibly cause premature labor. Cold sitz and foot baths especially have this reflex effect.

Hot baths for cleansing purposes should be taken at least twice each week. During the last few weeks they should be as brief as practicable.

Bearing Down Pains.—If there are bearing down pains and a sense of weight in the pelvis, and these symptoms are not relieved by the cure of constipation, then exercises on an inclined plane, with the hips a little higher than the level of the shoulders, such as are often recommended for the ordinary weaknesses of women, will be advantageous. Movements of the legs chiefly should be used in this case. The mere position of lying upon an inclined surface, with the feet higher than the head, without any exercise, is a valuable resting position to be assumed frequently for short periods to relieve the pressure on the bladder as well as the bearing down sensations.

Clothing.—See page 2570.

Conception.—Whenever the male spermatozoön joins the female ovum (egg) within the woman's womb, conception will take place. This latter should be considered the only object of sexual intercourse. Normally the female organism liberates from its ovaries but one ovum each month (usually during menstruation); it will, therefore, be plain, that although the male discharges millions of spermatozoa at each intercourse, conception need not necessarily follow. However, the spermatozoön retains its life and ability to impregnate the ovum for a long time after its discharge (ten to fifteen days), while the ovum remains in the womb and is also capable of impregnation for about five days after menstruation. Thus it will be seen that, on entering the womb, the spermatozoön may either meet an ovum which has been discharged at a previous menstruation, or else it may remain in the womb uninjured for a number of days and finally come in contact with a newly discharged ovum (at next menstruation). In either case conception (also called impregnation) is likely to take place.

As soon as this has happened, the impregnated ovum becomes attached to the inner lining (mucous membrane) of the womb, and begins its new life as an embryo. The period comprising the time from the impregnation of the ovum until the beginning of labor (childbirth) is called pregnancy.

Diet During Pregnancy.—Nearly every woman realizes more or less, as if by instinct, that the question of food has much to do with her welfare and especially with that of the child, but in the majority of cases her ideas upon the subject are incomplete, unintelligent or altogether mistaken. In many cases, women feel that they must eat as much as possible, because of "feeding two." Never was there a greater mistake, for the always detrimental influence of overeating is doubly injurious under these circumstances. Above all things, there should be no forcing of the appetite, and no eating without appetite. The appetite and instinct may be trusted absolutely. If one lives outdoors as much as she should, she will not fail to have an appetite.

Fruits and fresh, green salads are useful during the early months in combating tendencies to nausea, if there are any. As a matter of fact, it would not do any harm to live almost entirely upon these for several days at a time if the appetite should fail and one cannot relish heavier and more substantial foods. Oranges, grapes, peaches, berries, grapefruit, apples and the like are particularly gratifying. Do not attempt to eat meat, eggs or other rich foods simply from a sense of duty, for anything not relished will only make trouble and more than offset the fancied or intended benefit.

In all cases, foods should be simple and wholesome. Fried dishes and complicated mixtures should be left alone. All palatable raw foods are particularly recommended. For instance, it is better to eat the raw, fresh cherries or apples, than to eat apple pie or cherry pie. In the way of desserts, baked apples, simple rice puddings, tapioca and other similarly wholesome foods are best. Whole wheat bread should be used exclusively in place of white flour products, if only to combat tendencies toward constipation.

There is a theory which has been advocated a great deal, to the effect that it is advisable to follow a special limited diet which is deficient in bone-forming elements, in order that the bones of the child may be soft and so make the birth easier. Experiments of this kind, however, are inadvisable. Not only are the intended results doubtful, but they may be harmful. The bones of the new-born infant are naturally cartilaginous, anyway, and it is questionable if there would be any advantage in having them still softer, if it were possible, which is also doubtful. It seems to be a law of Nature that the child will be nourished if the tissue-building elements are at all to be found in the blood of the mother, and that if either must suffer, it is the mother.

For making birth easy, we should depend upon building the maximum of health and upon other factors.

In connection with the subject of food, it is important to understand the destructive influence of alcohol and drugs. It is quite a common thing for women to take "tonics" and medicines during pregnancy for the sake of stimulating an appetite or for other reasons. Most of these tonics contain a high percentage of alcohol and usually other drugs. All drugs are poisons, to a greater or less degree, and are taken into the circulation of the child just as sure as they are present in the circulation of the mother. The newly forming tissues of the unborn child are extremely sensitive and susceptible to the destructive action of alcohol and other poisons.

Exercises During Pregnancy.—Exercise during pregnancy is important for the same reason that it is indispensable at any other time if one wishes anything like true health.

In the chapters on exercises for women, in an earlier volume, will be found many movements particularly suited for use during gestation. Among these may especially be mentioned Exercises Nos. 1, 2, 3 and 4 for the stomach, and Nos. 1, 2 and 3 for the waist. Lessons 1 and 2 under Class Drills should also be of value during pregnancy.

It must be remembered that the womb is a muscular structure of remarkable power when healthy, and is reinforced by the external muscles of the abdominal walls. It is well, therefore, early in the course of pregnancy, to devote considerable attention to exercises for strengthening the abdominal region. Some of these exercises may be continued to the very end of the term, but the more vigorous or violent among them may gradually be discontinued with the increasing size of the body. The function of birth really depends upon the contractile power of the muscular tissue of the womb, and surely one cannot expect this organ to be vigorous if the general external muscular system of the body is flaccid and relaxed. One may, indeed, judge of the condition of internal muscular structures by the development of those externally placed. It is not simply strength that is desired, but elasticity as well—elasticity above all things. And this elasticity is not to be found, cannot be expected in a body that is weak and inactive—stiffened by inactivity.

As to the kind of exercise, it may be said that what may be satisfactory for one might prove to be too much for another. There are some women who may continue to go through the most strenuous exercises throughout the entire term. I have known of one very strong woman who followed the career of a circus acrobat up to the very day of the birth of her child, and who was back in the arena three or four days later. In the case of others, however, some care may be necessary. Even these, for the first three months, may be as strenuous as they wish, but after four or five months it may be taking a risk to indulge in violent exercises. Fast horseback riding, hard rowing and the like are questionable. Remember that the fetus is placed in a quantity of the so-called amniotic liquid, contained in a membranous bag, the "bag of waters," of which one hears, and that any rupture of this membrane, with the leakage and loss of this fluid, will result in an immediate miscarriage or premature labor. It is for this reason that violent exercise during the later months should be discouraged, though moderate exercises should certainly be kept up to the very last. Walking is undoubtedly the greatest of all beneficial exercises for the prospective mother, and, if possible, it will be well for her to cover from six to ten miles daily.

EARLY SYMPTOMS AND SIGNS OF PREGNANCY.—The sooner one can determine the existence of pregnancy, the sooner all measures leading to an easy childbirth can be instituted. It is, therefore, important to be able to diagnose pregnancy as early as possible. The diagnosis is based on the early appearance of certain symptoms and signs which, although not characteristic when taken singly, become very valuable when they appear simultaneously.

First and foremost among the early changes of pregnancy one notices the disappearance of menstruation. For itself cessation of menses does not necessarily mean pregnancy. There are a number of other conditions such as anemia, chlorosis, certain mental and nervous disturbances, climacterics, beginning consumption, in which the menses may be delayed or cease. On the other hand it must be remembered that pregnancy may exist, even though menstruation goes on as usual.

All the other changes taking place during the first few weeks of pregnancy are so slight in their onset and gradual in their development, that for a while they remain entirely unnoticed. Soon, however, one or more symptoms appear that make it probable that pregnancy exists, and as time moves on, the probability changes to a certainty.

Frequently we notice a change of mood. A woman usually amiable in disposition becomes morose, irritable, melancholic; a phlegmatic individual on the other hand may become exceedingly vivacious. There is often a sense of dizziness, a disposition to faint, or even actual fainting spells may occur. Perversion of taste may appear, with strange fancies for eating unusual, sometimes disgusting articles.

With or without the above symptoms there occurs at a very early stage of pregnancy, usually in the morning, a sensation of nausea, which very often culminates in vomiting (the vomiting of pregnancy). The latter in some, fortunately rare, cases becomes so excessive as to endanger the life of the woman.

Constipation, of which women in general so commonly complain, becomes marked during pregnancy.

Owing to an increased blood supply to the breasts there is a tingling sensation, with a feeling of fullness in the latter. The nipples grow large, the dark field around the nipples grows darker and wider.

Similar discolorations appear in other parts of the body. We notice in particular a dark line running down the middle of the abdomen from the navel to the pubic bone (symphysis). Dark blotches and discolorations of the skin often appear on the face and elsewhere.

Whenever several of the above symptoms occur simultaneously, one can diagnose with great probability the existence of pregnancy, provided, of course, that sexual intercourse took place some time previous to the appearance of these symptoms.

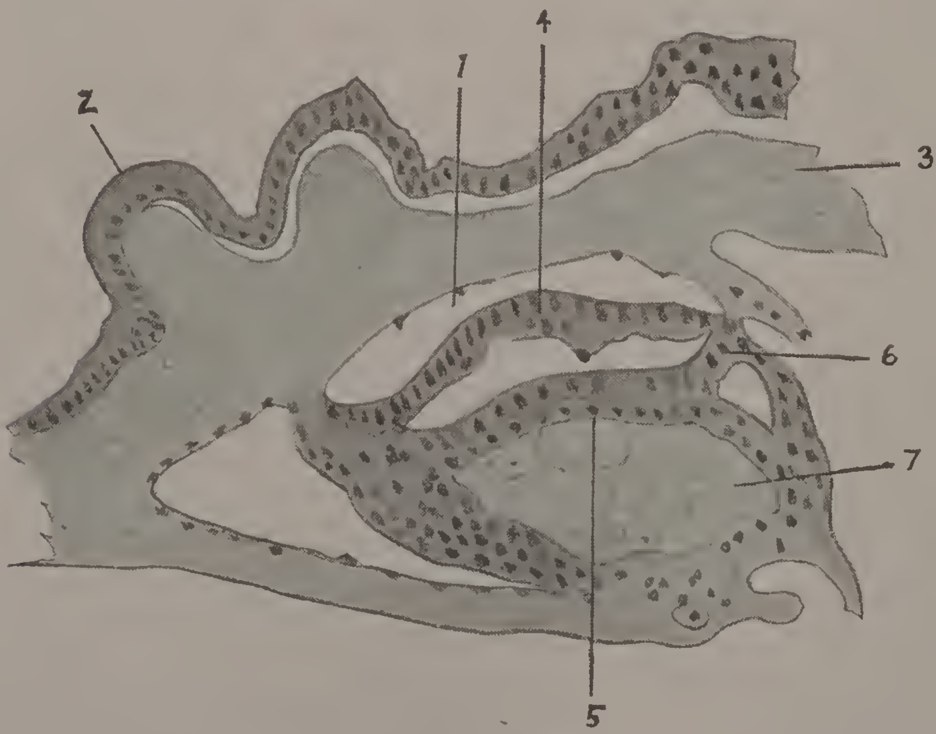
However, the diagnosis can not be absolutely positive until such later period, when one can ascertain the existence and development of an embryo.

FASTING.—During pregnancy, fasting for a prolonged period is not advised, but if there is a loss of appetite or if a digestive disturbance requires a short fast, it is certainly better to fast than to eat and prolong the disorder. Of course, care should be observed when this form of treatment is adopted.

FOOD.—See *Diet During Pregnancy.*

GROWTH OF THE EMBRYO.—At the time of its impregnation the ovum is a single cell, measuring about 1-120 of an inch in diameter. As mentioned before, it becomes adherent to the mucous membrane of the womb soon after its impregnation and begins its life as an embryo. The development of the embryo from the cell is too intricate to be given here in detail. Suffice it to say that by a process of successive division and subdivision of the original cell and by a differentiation of the resulting cells into various tissues, the ovum not only grows rapidly in size but also assumes distinct shape. By the end of the fourth week of gestation the ovum attains the size of a pigeon's egg, and at the end of the second month it is as large as a hen's egg. At that time it consists of a rather thick membrane enclosing a fluid in which floats the embryo proper, which by now has grown to a length of one inch. In the latter one can already distinguish the main parts of the body, the beginnings of ears, eyes, a mouth and nose, and a genital apparatus. The heart is fully formed, and there are the beginnings of all the other inner organs. The embryo is connected with the membrane of the ovum by a cord through which it derives its nourishment. The membrane of the ovum is smooth on its inner surface, but the outer coating, *i. e.,* the surface in contact with the inner wall of the womb, is covered with numerous tuft-like projections (called villi), which bury themselves in the mucous membrane of the womb. By the end of the second month those villi nearest the point of attachment of the cord branch out and grow to greater length, while the rest of the villi gradually disappear. Thus the ovum lies now free in the womb except for an area at which the cord of the embryo begins. Here, however, the attachment becomes much closer, the mucous membrane of the womb growing thicker in proportion with the growth of the villi; this part is now called placenta or mother-cake (afterbirth).

With the formation of the placenta the growth of the embryo proceeds even more rapidly. At the end of three months the embryo is three inches long and is now called a fetus. At the end of the fourth month the fetus reaches a length of five inches, and at the end of the fifth month it is seven inches long. Its movements within the womb are now so marked as to become felt by the mother, as sudden light tappings against the abdomen, called "quickening." When born at this stage the fetus will live from a few minutes to a few hours. At the end of the sixth month the fetus is about eleven inches long; when born at this stage, it will live from one to fifteen days, but is likely to die owing to insufficient development. At the end of seven months it is fourteen inches long; when born at this stage it will usually die, but may live when placed in an incubator. At the end of eight months it is fifteen inches long; with proper care it will usually live when born at this time. At the end of nine months it is about seventeen inches long, and when born should certainly live, with ordinary care. During the tenth



Cross-section of human embryo at a very early stage, showing first formation of membranes and parts. 1, amniotic cavity; 2, chorionic ectoderm; 3, chorionic mesoderm; 4, embryonic ectoderm; 5, endoderm; 6, embryonic mesoderm; 7, yolk-sac.

month of pregnancy the fetus reaches full maturity, pregnancy approaches its termination and delivery follows.

Changes Due to the Growth of the Fetus.—These are of two kinds, those affecting the womb, and those affecting the entire organism of the woman. As the fetus and the containing ovum grow in size, they distend the womb more and more. In addition to this the walls of the womb become considerably thicker, its muscle-fibres growing both in length and thickness. The enlargement of the womb can be ascertained by vaginal examination as early as the sixth or seventh week of pregnancy, and becomes visible to the eye after three months, when the womb attains such size that it finds no room in the cavity of the pelvis but extends upwards into the abdominal cavity. In the next few months the enlargement becomes more and more visible; at the end of the ninth month it attains its maximum, reaching up to the end of the breastbone and filling out the entire abdominal cavity.

As the weight of the womb with its contents is considerable and the abdominal muscles often are not strong enough to withstand their pressure, the womb frequently falls forward, producing a characteristic protuberance of the abdomen. This position of the womb causes a shifting of the center of gravity of the entire body forward and to correct it as much as possible, the woman instinctively spreads her legs and throws her chest backward, thus markedly accentuating the lumbar curve of the spine. In

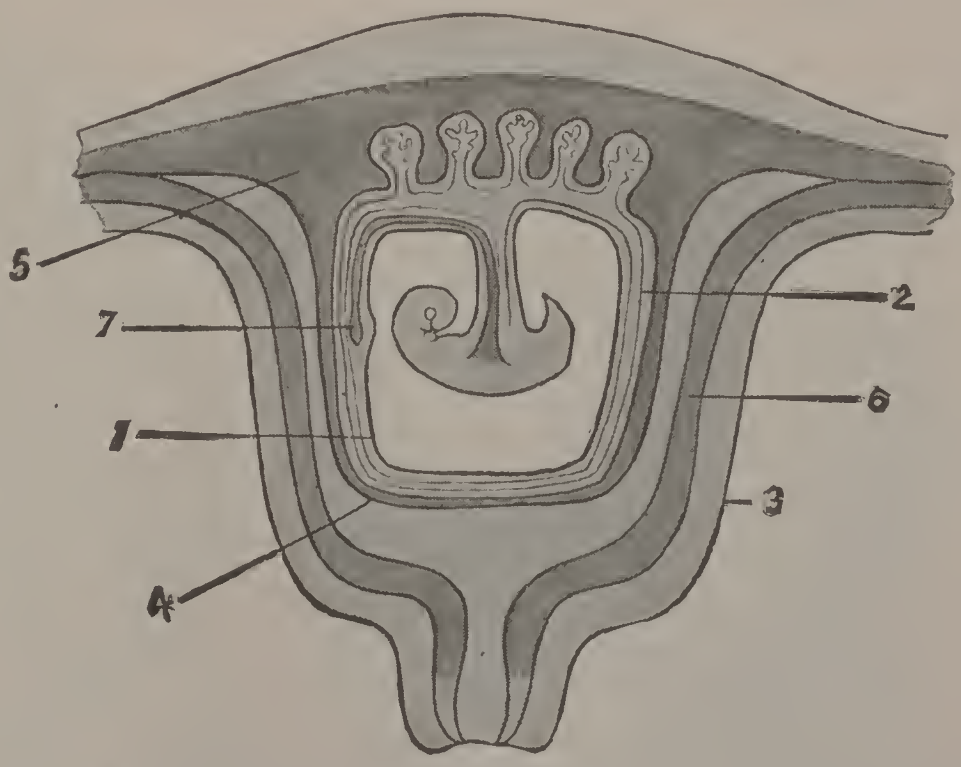
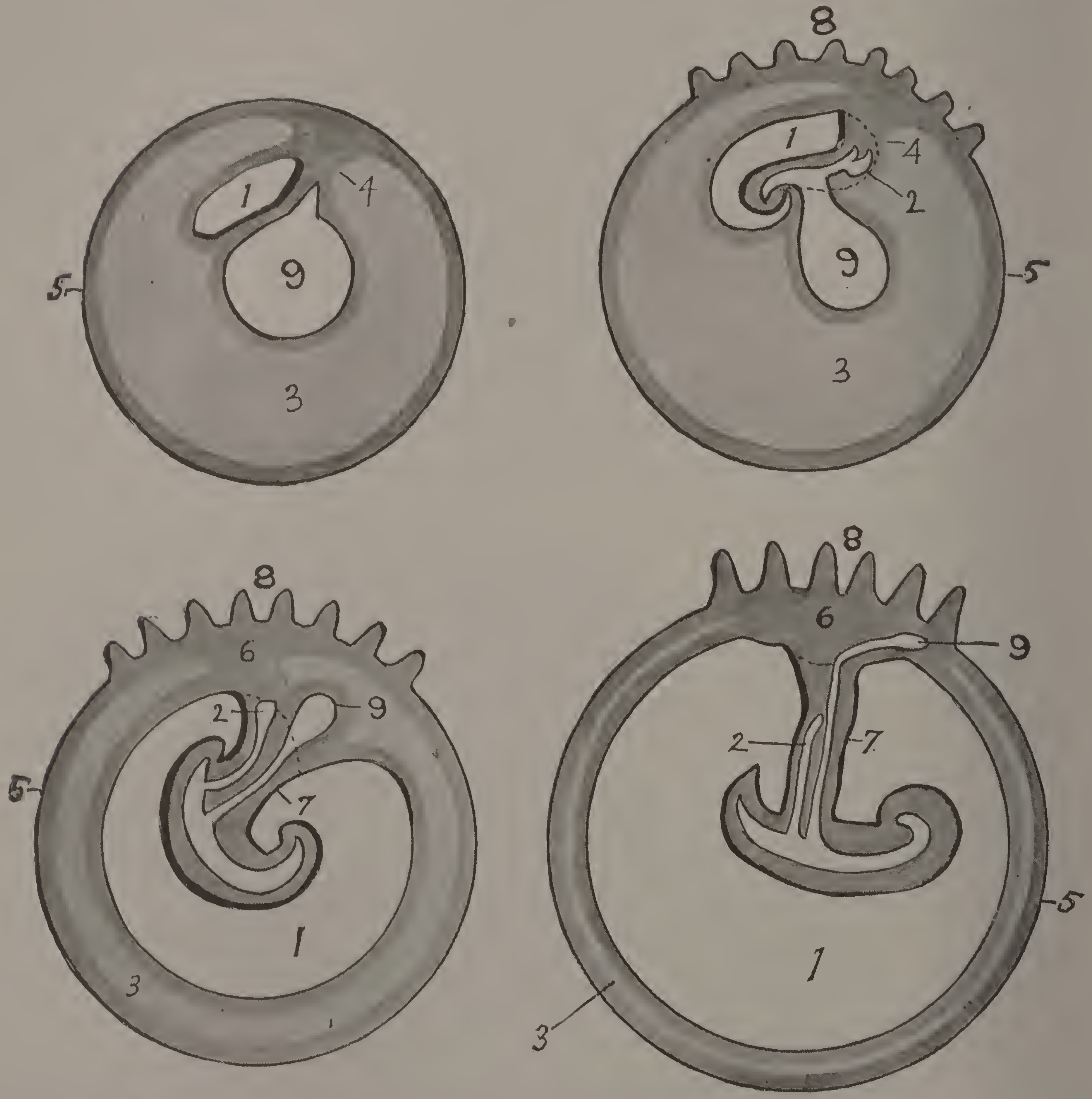


Diagram showing womb in early pregnancy, the embryo floating in the liquor amnii in the amniotic cavity, and the relation of the fetal membranes. 1, amnion; 2, chorion; 3, muscular wall of the womb; 4, decidua reflexa; 5, decidua basalis; 6, decidua vera; 7, yolk-sac.

this manner the whole body assumes a very characteristic, though not very æsthetic attitude.

Naturally a body as large and heavy as the pregnant womb will press upon the neighboring organs and interfere with their function. Pressure upon the bladder will irritate it and cause a frequent desire to urinate. Pressure upon the lower part of the bowel will cause constipation. Finally, pressure upon the large blood-vessels carrying the blood from the lower extremities will cause stagnation in the circulation of the latter, often leading to the formation of varicose veins.

Aside from these purely mechanical effects of pregnancy,

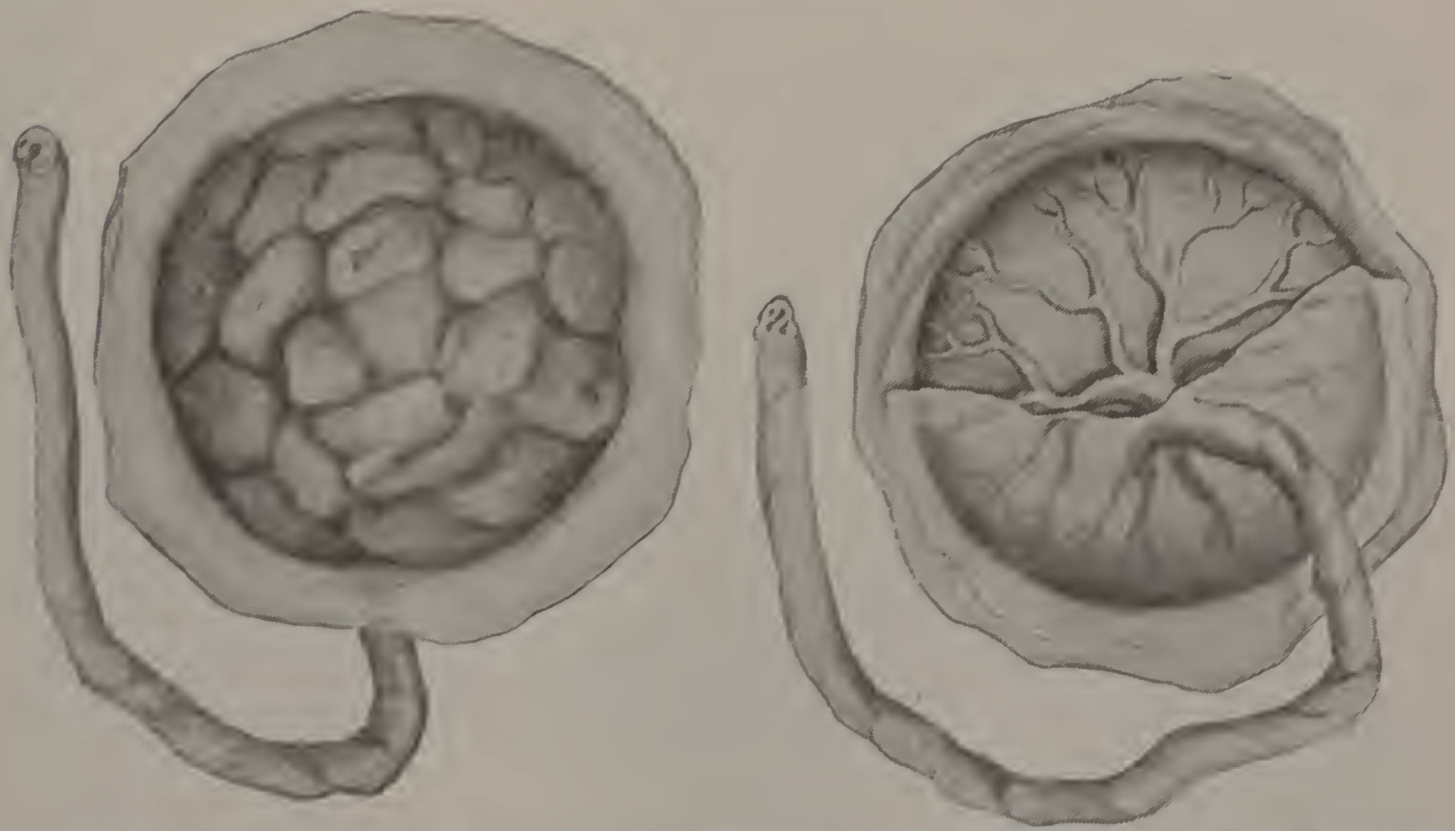


Diagrams illustrating method of early development of the human embryo and the formation of umbilical cord and placenta. 1, Amniotic cavity. Note how it gradually enlarges and surrounds the embryo. 2, Allantois, a rudimentary excretory and respiratory organ; 3, extra-embryonic coelom; 4, belly-stalk; 5, chorion; 6, placenta; 7, umbilical cord; 8, chorionic villi; 9, yolk-sac, which gradually shrinks.

the presence of the living fetus causes other, even more important changes, in the organs of the woman. The fetus requires for its life and growth nourishment which it derives from the mother's blood; on the other hand the fetus produces waste matter which is deposited in the blood and enters the mother's circulation, to be finally discharged through her urine. Thus two of the mother's most vital organs are compelled to perform extra labor: the heart to pump blood sufficient for the maintenance of life of two individuals, and the kidneys to excrete their waste materials.

Again, knowing the close relation of heart and lungs, one can easily understand that increased heart action causes increase in the circulation of the lungs with a tendency to attacks of congestion and colds (bronchitis).

The reader who followed this description, undoubtedly realizes that pregnancy is not a simple matter, that its changes are many and far reaching. In fact, the whole organism of the pregnant woman must undergo some modifications to adapt itself to the new conditions. Nevertheless, in the vast majority of cases, these changes come about so naturally and cause so little discomfort, that we are safe to assure the pregnant woman of a happy termination of her pregnancy, pro-



Two views of the placenta. To the left the under surface, or maternal surface, and to the right the upper or fetal surface with the umbilical cord and the membrane partly removed to show distribution of blood-vessels.

vided she was in good health before conception and leads a natural life thereafter.

Management of Pregnancy.—The proper management of pregnancy begins long before conception. The woman who has been living a natural life before conception and has therefore preserved a strong and healthy body, may expect less difficulty during pregnancy and childbirth, than would be the case otherwise. Such natural mode of life is recommended elsewhere in this work, where proper rules for outdoor life, rest and exercise, diet and personal hygiene are given. These rules include in particular also strict sexual continence unless offspring is desired.

But even the woman who before conception has not been a follower of the teachings of physical culture may do a great deal toward a comfortable pregnancy and comparatively easy childbirth, by adopting the principles we advocate.

The diet in this condition is of utmost importance. Do not be misled by the ill-advice "to eat for two." Overeating is harmful at any time, but it is most harmful at a time when the kidneys are forced to perform extra labor. Remembering this the woman will live on a simple diet, which will consist chiefly of milk, cereals, fruits and fresh vegetables. One

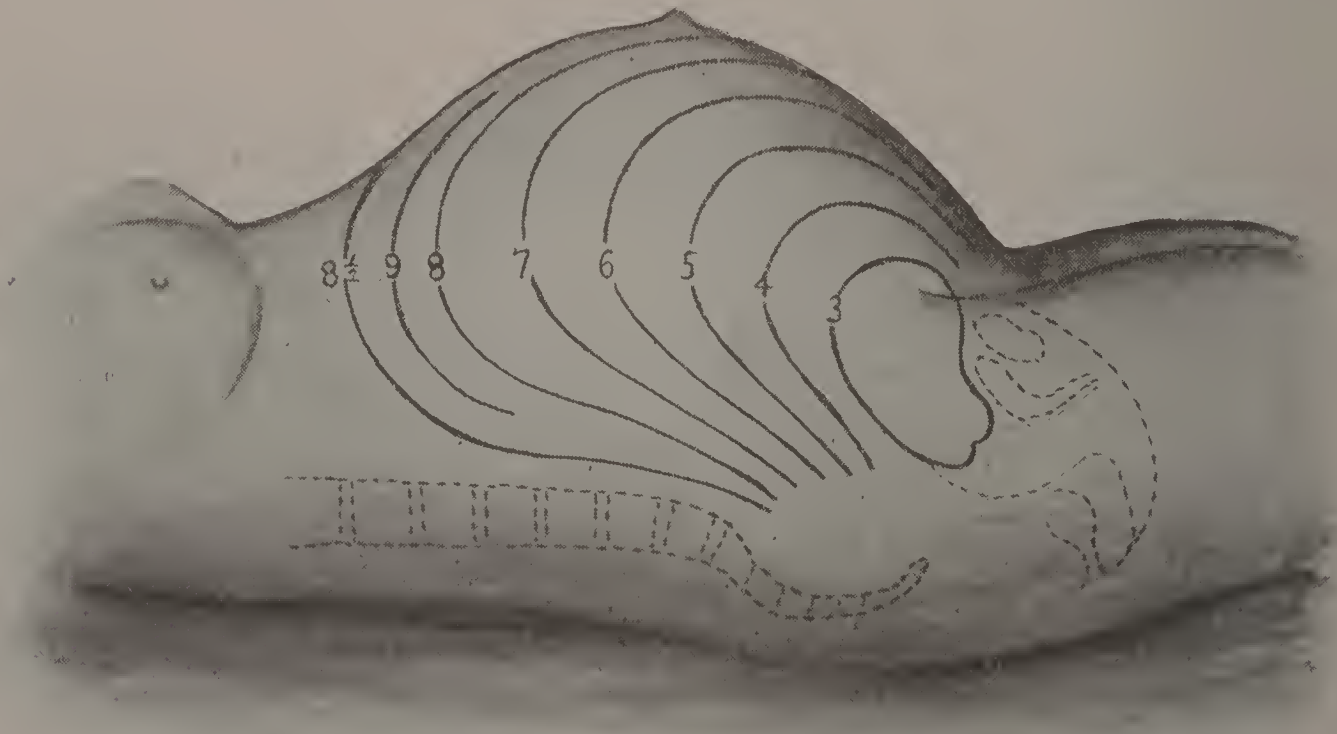


Diagram showing the growth and size of the womb during pregnancy, the numbers 3, 4, 5, etc., indicating the outline at the end of the third month, fourth month, etc. Between 8½ and 9 months, the womb settles downward somewhat.

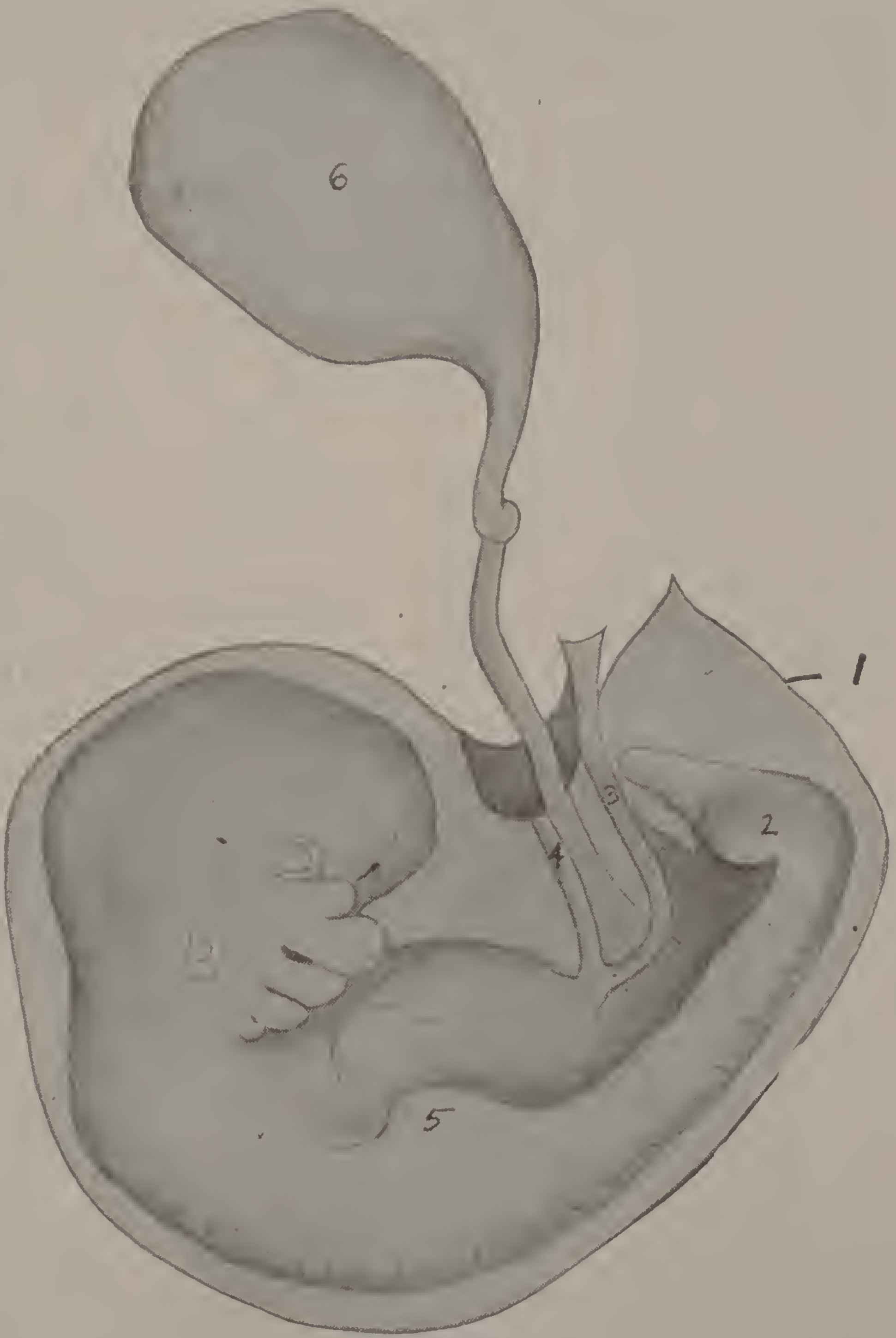
to two quarts of water should be drunk during the day. Meat is best avoided altogether, and if taken, must not be eaten more than once daily and in small quantities. Rich, indigestible food and alcohol should be avoided, the use of coffee and tea should be restricted.

The kidneys demand constant supervision. The urine should be examined at regular intervals, and at the first appearance of albuminuria a strict milk diet should be followed.

The prompt relief of the bowels and bladder before retiring and immediately upon rising is most necessary.

Moderate outdoor exercise is very beneficial. Walking, driving over smooth roads, flower and vegetable gardening are recommended. Attending to household duties is advisable. No exercise, however, should be carried on until fatigue sets in. Sea voyages, horse-back riding, dancing, lifting, straining, working the sewing machine (by foot) must be avoided.

Rest as well as exercise is es-

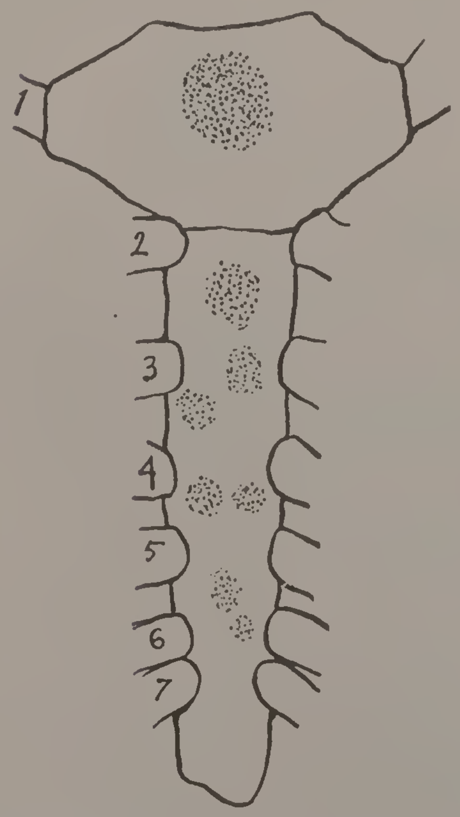


Human embryo at about three weeks, showing the beginning of some definite formation of parts. 1, amnion; 2, lower limbs; 3, umbilical artery, a part of umbilical cord; 4, umbilical cord, enclosing also stalk of yolk-sac; 5, arm; 6, yolk-sac, an early organ of nutrition, largely rudimentary in the human race, which soon shrinks up, with its yolk-stalk, to a slender column of cells in the umbilical cord. The formation of the head at the left extremity of the figure is very apparent.

sential for the pregnant woman. Owing to the close connection between the mother and her unborn child every unnecessary strain on the nervous system of the mother is communicated to the impressionable nerves of the child. This accounts for much of the excitability of some children and their predisposition to nervous diseases. The woman should therefore be protected from unnecessary excitement and worries. She should get an abundance of sleep and should best not indulge in sexual intercourse.

The clothing worn should be appropriate to the season. Corsets must be entirely discarded. Strings and waistbands must be avoided, and instead the clothes should be suspended from the shoulders.

The general discussion of dress for women in Volume II will apply for the most part during pregnancy as well as at other times, though there is a far greater need for care to avoid unhealthful fashions at this time. Clothing suspended from the shoulders, for instance, is advocated for all occasions, but during this period the advantage of such arrangements is infinitely greater, and thus more important.

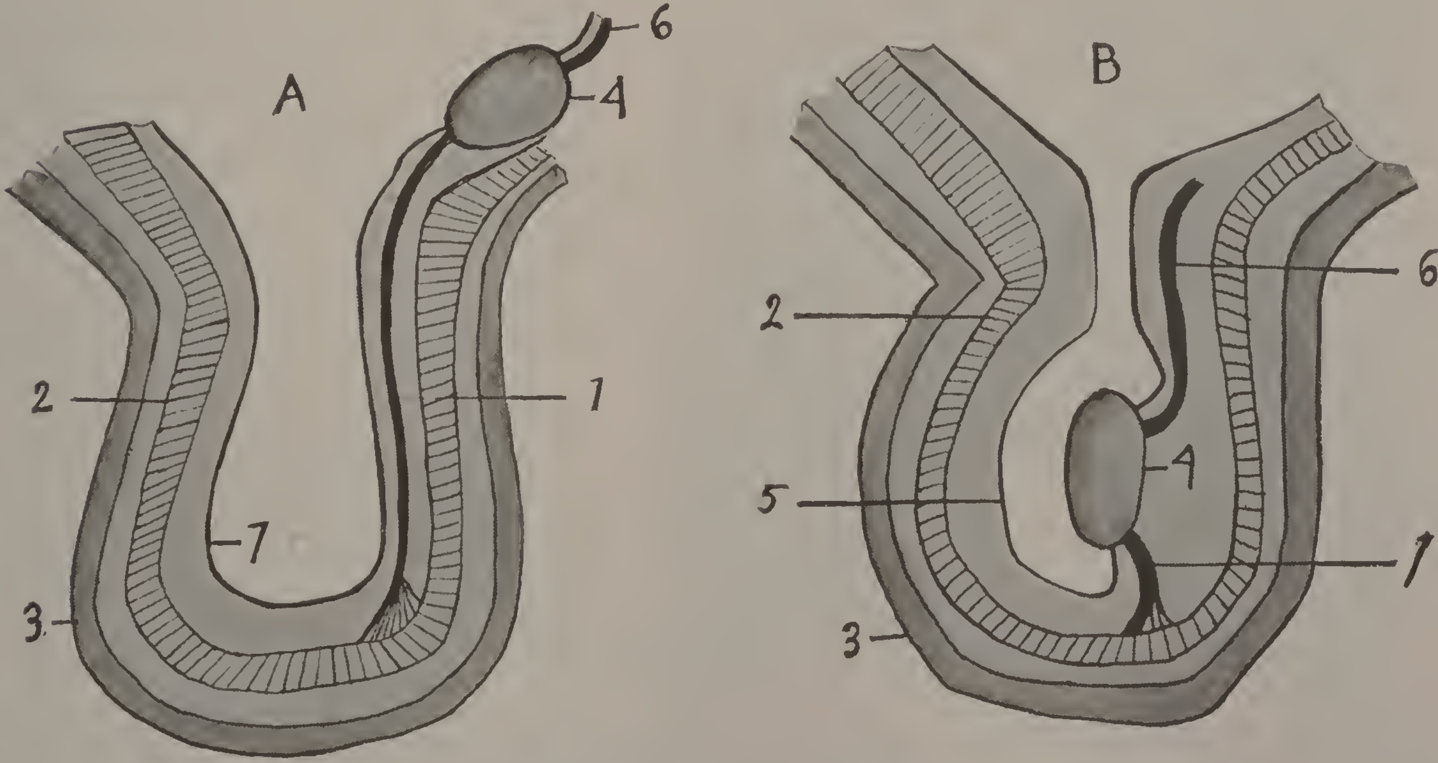


Sternum of a new-born infant. Bone is not formed as an original tissue, but develops from cartilage or fibrous tissue. The dotted spaces here show centers of ossifications. 1, 2, 3, 4, 5, 6 and 7 are cartilages of the ribs attached to the sternum.

When discarding corsets do not seek a substitute, forgetting that any real substitute for such a needless and injurious device is likely to be as objectionable as the corset itself. It is better to avoid anything that even remotely suggests the corset, but if one insists upon wearing something of the kind for the sake of supporting other garments and hose, a corset-waist that is without steels or whalebone may be used. This is buttoned down the front and laced at the sides so as to permit of indefinite enlargement to conform to the growth of the body, and the garters are suspended from the sides and front. It should fit loosely.

The only form of garter or hose supporter to be used in other cases is one that hangs from the shoulders, and this may be made very readily by any competent woman from the design shown in the illustration. It may be made of webbing one inch wide, with ordinary elastic hose supporters attached half way down. The best plan is simply to place the webbing upon and around the shoulders and pin it to fit, after which it may be sewed.

In the way of underwear, combination garments are especially advocated, thus avoiding any constriction at the waist from drawers or petticoats. One may use a combination chemise and drawers, and a combination corset-cover and petticoat. (See illustrations.) In buying underwear, it is well to secure union suits larger than usually worn, to allow for the enlargement of the body and especially the increasing distance from the neck down. In summer, naturally, the least worn the better. Women pregnant in winter are sometimes advised to wear a woolen union suit covering the body from the neck to the feet, thus maintaining warmth without the necessity of a great deal of heavy clothing to bind and press upon



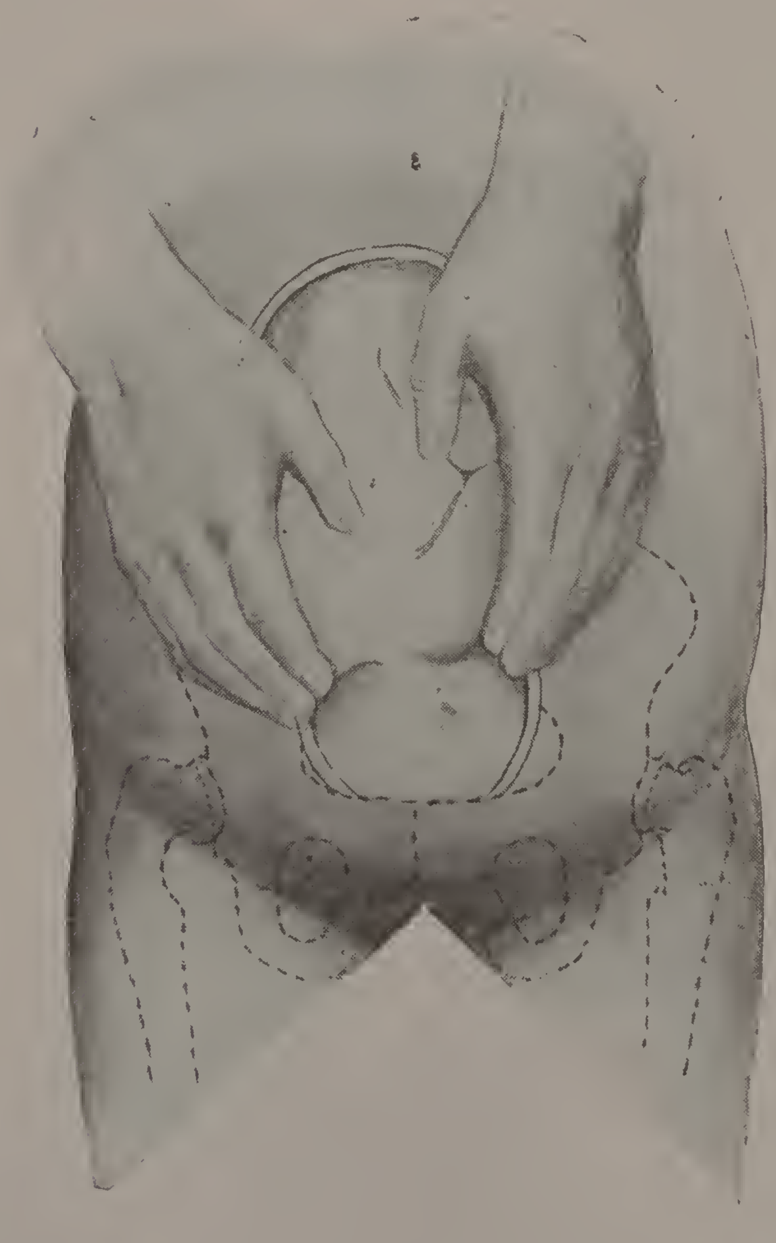
Diagrams showing descent of the testis into the scrotum some time before birth, A, before, and B, after descent. 1, Ingesinal ligament; 2, muscular layer; 3, skin and fibrous layer of scrotum; 4, testis; 5, tunica vaginalis; 6, vas deferens; 7, vaginal process of peritoneum.

the person. Woolen fabric next to the skin, however, is usually not desirable, and it may be better to wear first a thin cotton or linen union suit, and over this a moderately light one of wool.

The shoes to be worn during pregnancy should be ample and comfortable, whether there is any swelling of the feet and ankles or not. High heels, an abomination at any time, are especially injurious during this period, inasmuch as they disturb the normal poise of the body and involve an unnecessary strain. The flatter the heels and the nearer one comes to the position of the foot as Nature intended it, the better.

As to external clothing. The kimono, in various forms, may be commended as an appropriate house garment during pregnancy. The general principle to be observed in dresses is the one-piece idea, avoiding the waist line and hanging from the shoulders. A Greek effect may be commended, with something in the nature of a girdle close up under the breasts, the gown draping from that point straight downward.

In all dresses and coats it is always well to provide a fairly large collar to balance the figure at the top. The lack of a collar gives the undesired "barrel shape" and too much prominence. Fullness at the bust, ruffles and laces at the top are always helpful. If economy demands the use of a skirt, it should be very full and shirred at the back by an inside



Palpation or manual examination with both hands, locating head of fetus with the fingers.

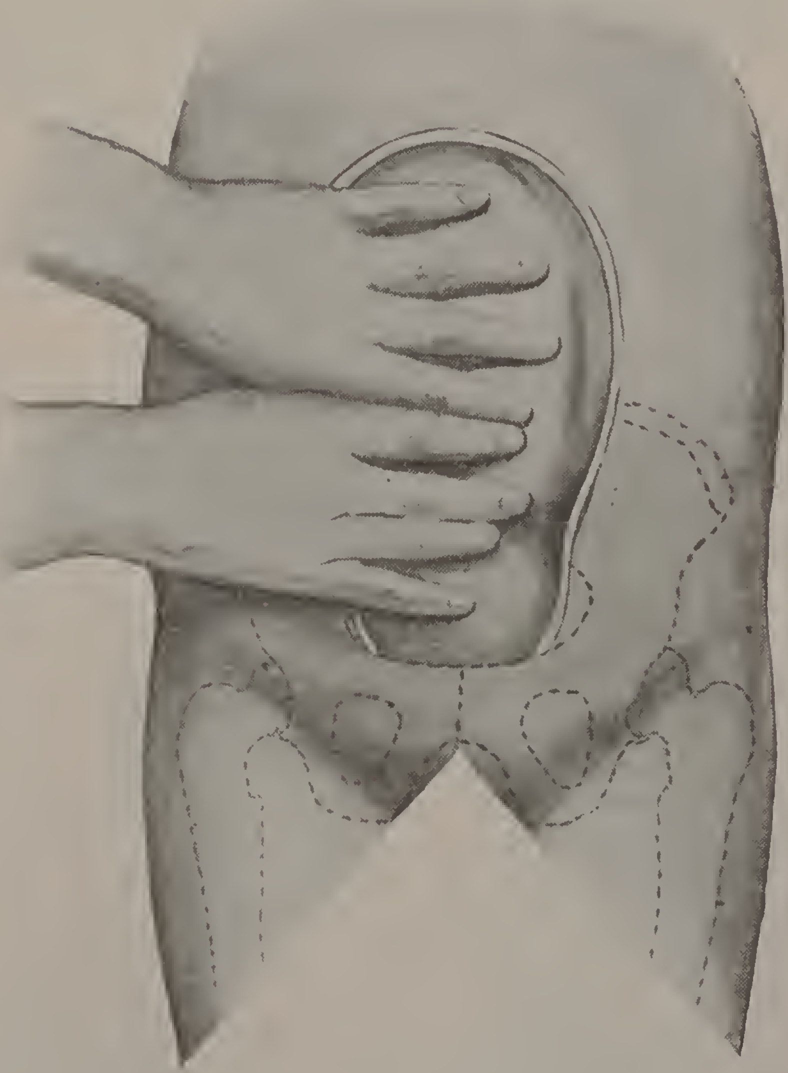
string. The shirt waist in such a case should hang loose and free from the shoulders in front, several inches below the waist line, instead of fastened to a band. It can then be pulled up and adjusted as desired and may be worn throughout the whole pregnancy without alteration.

Frequent warm tub baths with an abundant use of soap promote secretion of the skin and are very beneficial. They are best taken at night. A cool sponge bath in the morning is also recommended. Very hot or very cold baths should be avoided.

The breasts must not be pressed upon by the clothing. When heavy, they may be supported by an appropriate band. If the nipples are flat or drawn in, they must be drawn out between the fingers daily during the latter months of pregnancy.

To correct the unsightly appearance, the muscles of the back and abdomen must be brought into action. By exercising a little care in holding herself in a correct position, the sagging of the small of the back and the protrusion of the woman's abdomen can be avoided.

These rules will assure the best possible conditions for gestation, and ameliorate, if not entirely banish, the uncomfortable and distressing symptoms which usually accompany pregnancy and weaken both mother and child.

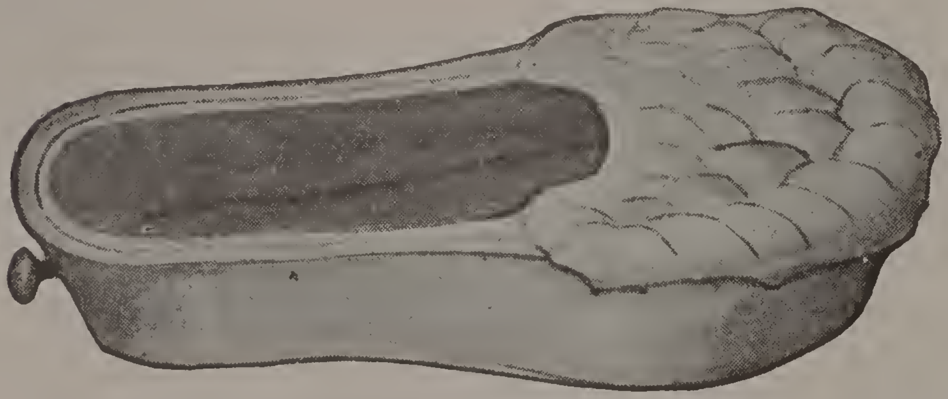


Palpation or manual examination with both hands laid flat, in this case locating the size of the womb and the back of the fetus.

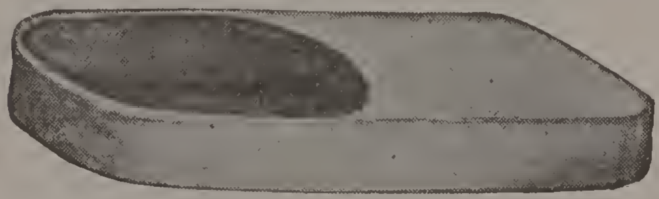
ILLNESS DURING PREGNANCY.—See *Intercurrent Diseases,* page 2582.

MORNING SICKNESS.—While the morning vomiting which occurs in many cases of pregnancy is regarded as natural, it can be greatly relieved by following the diet recommended in a later paragraph for constipation.

This complaint is often caused entirely, or at least greatly aggravated, by sexual intercourse during pregnancy. By avoiding over-eating and following a healthful diet in general, as advocated in other parts of these volumes, symptoms of this kind should be eliminated. It is usually better in such cases to eat your heartiest meal at noon, and use fruits or green salads at your evening meal. Heavy foods are best avoided altogether. In some cases it is best to use acid fruits alone at the evening meal. This will insure a good appetite for breakfast the next morning. Frequently a bit of dry bread, a prune or any such appetizing food that you can take in bed before arising in the morning will immediately remove any tendency to morning sickness.



A bed-bath, a very convenient appliance for washing and douching, which will help greatly to make matters comfortable for both mother and nurse. A bed-bath can be improvised also by the use of a comfortable pad on the common type of bed-pan.



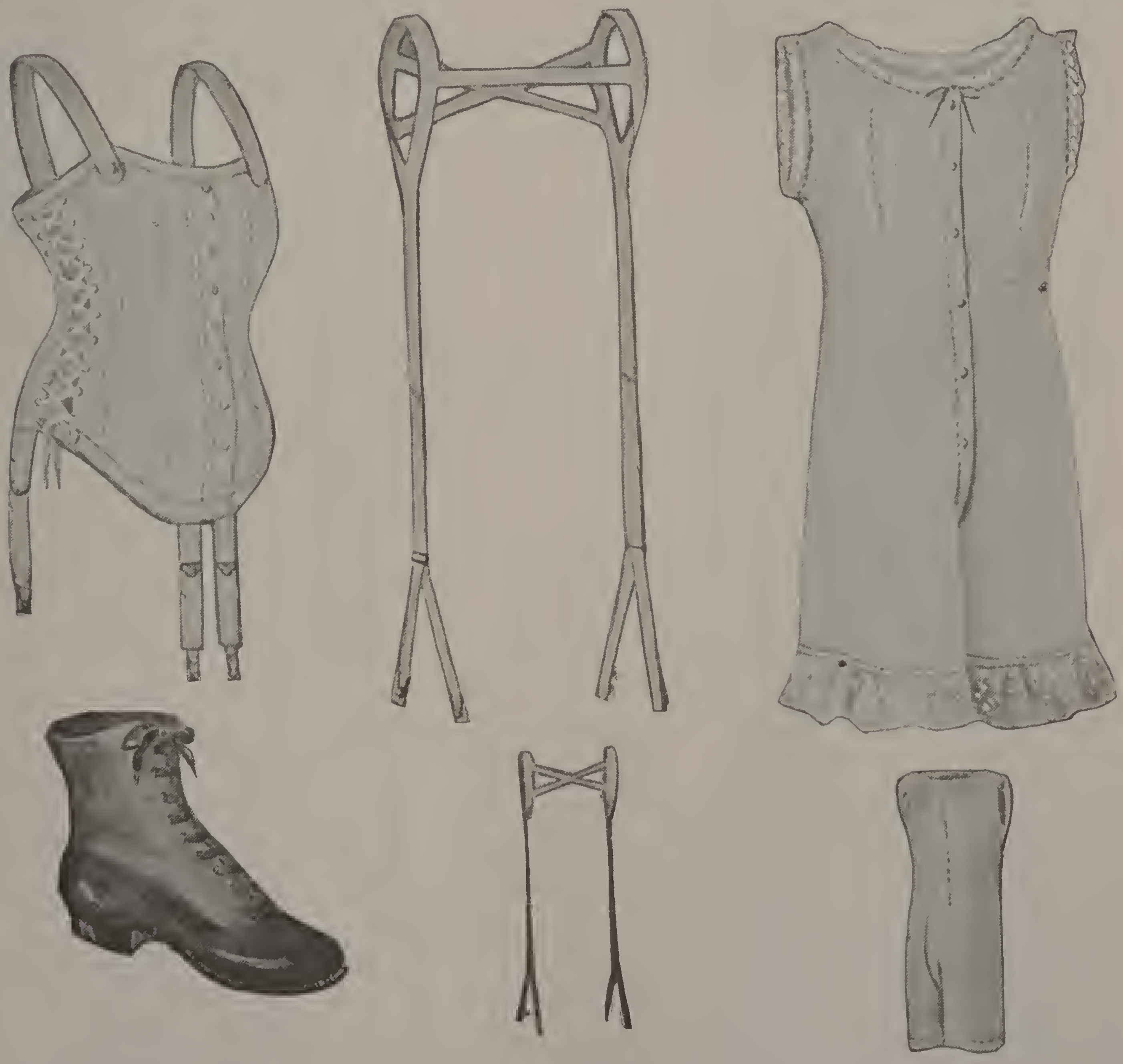
A convenient but simple and comparatively inexpensive type of bed-pan. Should be comfortably warmed before using, and may be made comfortable with a small pad across the covered part of the top.

A fast now and then, followed by a restricted diet for a day or two, with a gradual return to the full diet will be very efficient. Washings of body with cool water and a general invigorating régime will often prove beneficial.

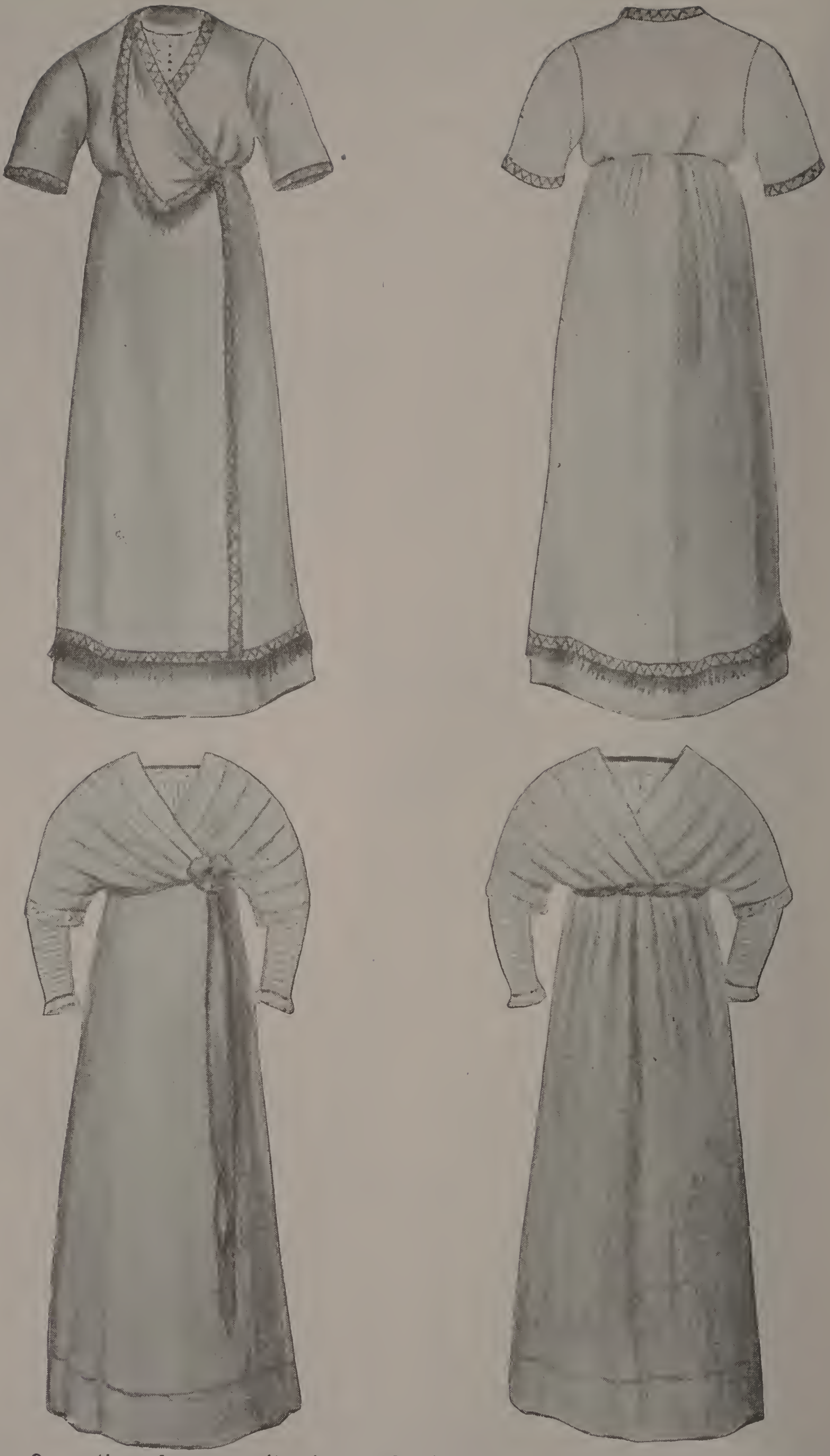
CONSTIPATION AND DISORDERS INCIDENT TO PREGNANCY.—Constipation should be looked after very carefully. A

Slipper shaped bed-pan, a very convenient type. It should be protected by a covering of flannel or other suitable material, made to fit. Two or three of these coverings should be provided, that they may be washed if necessary.

diet of boiled wheat will often relieve it, or make a complete meal of ripe fruit. Do not, however, mix raw fruits and cooked vegetables. Raw grains are often very useful in making the bowels regular, and their demand for mastication is of benefit. Honey, milk, and cooked rice make an excellent meal. A baked apple (thoroughly mushed), eaten without cream or sugar, with a spoonful of boiled rice, is easily digested. Stewed and steamed figs are excellent, eaten with grains,



Clothing for Pregnancy. At the left, a maternity corset substitute, without steels or whalebone, laced at sides, and buttoned down the front. Below, the sensible, low-heeled type of shoe to be worn. In the center, a simple type of home-made hose-supporters, made of one-inch webbing, and suspended from the shoulders. At the right, combination chemise and drawers, to avoid constriction at the waist.



Suggestions for maternity dresses for house and street wear, front and back views, made of any inconspicuous material and neutral color. Should naturally be made longer in front, or made to let down and lengthen in front. These are one piece dresses, not separated, but with a line of satin piping of a contrasting shade to give the high-waisted or girdle effect.

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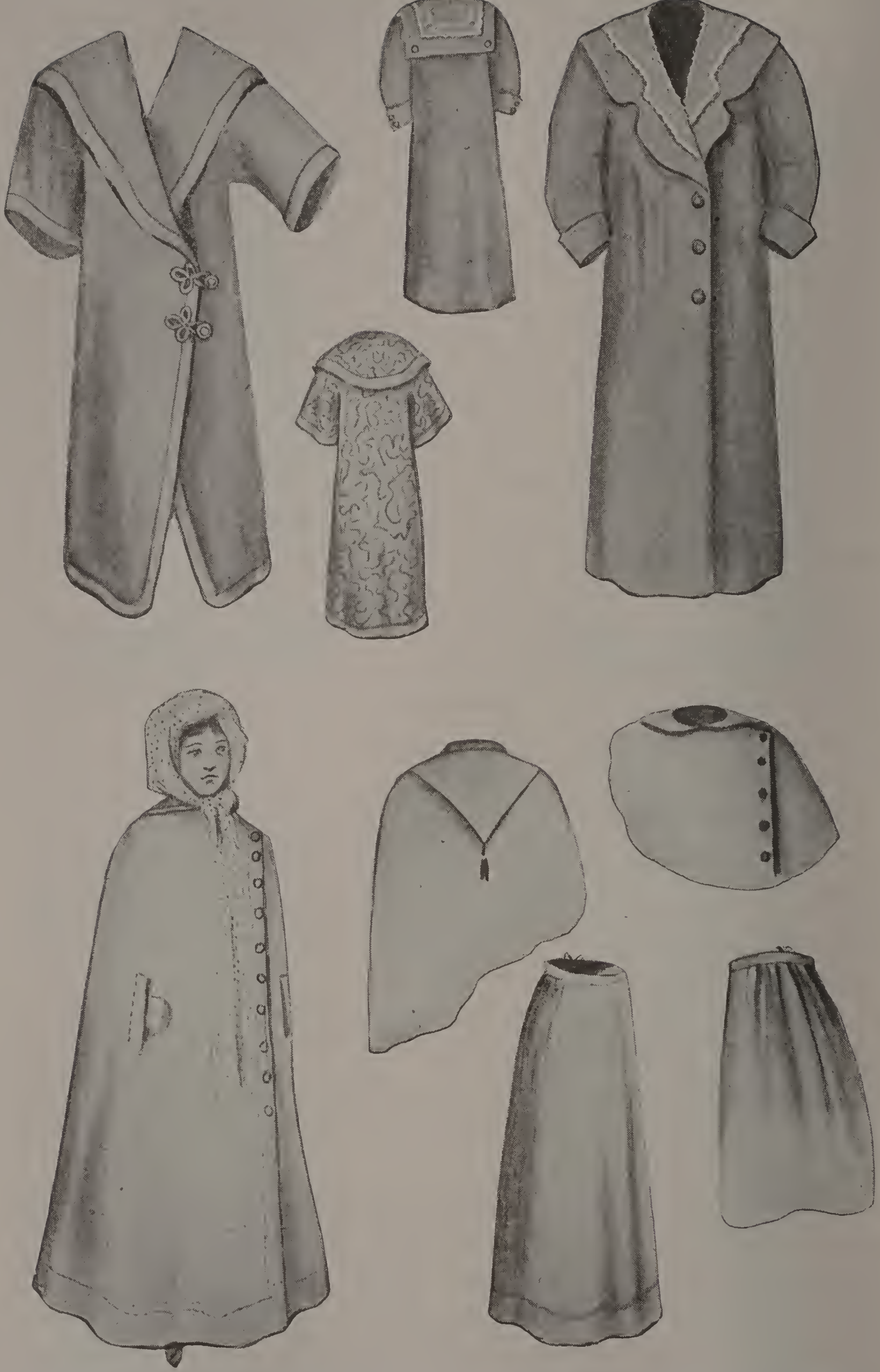
raw or cooked and with a little cream. Sago, tapioca, vermicelli, are also excellent, but they should be sweetened with honey (not sugar), or made savory with tomato bisque.

The bladder irritation due to pressure of the pregnant uterus can be much relieved by frequent warm baths, and the avoidance of tea and coffee. More serious kidney diseases are apt to develop in women who have not kept up the strict diet regulations. For this reason we recommended frequent urine examinations. The appearance of the slightest trace of albumen in the urine should be considered of grave import, and a strict milk diet should at once be instituted, or else the woman will surely develop Bright's Disease. Outside of albumen in the urine, Bright's Disease in its more advanced stage is characterized by the appearance of swellings of legs and face. Sometimes, however, all these symptoms are missing, and an apparently healthy woman becomes suddenly seized with convulsions, which are the first signs of a disturbed kidney function. This grave condition, called Eclampsia, usually occurs during the last few months of pregnancy or during labor, rarely shortly after labor. Heroic measures of treatment are required. Pregnancy should at once be terminated, and the fetus extracted with as much despatch as possible. The further treatment is the same as described in Vol. IV, under Uremia and Eclampsia.

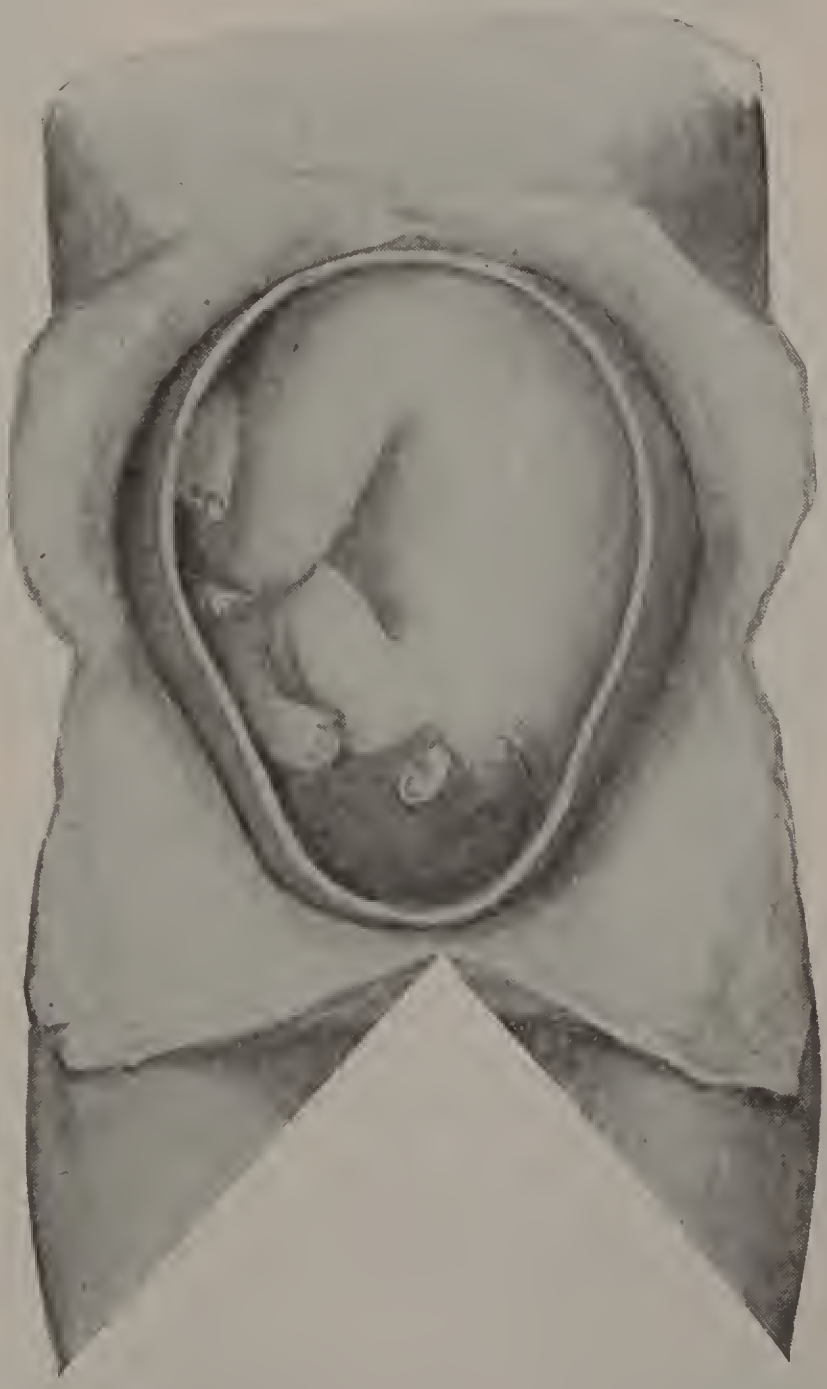
Many women are troubled by swellings and varicosities of their lower extremities. These can be relieved by regular massage, and eventually by the application of a flannel bandage. In more severe cases, the wearing of elastic stockings may become necessary.

Miscarriage.—It is estimated that about one out of eight pregnancies does not go on to term, but ends in a premature expulsion of the unripe ovum. When this occurs at any time before the end of the third month, we speak of an abortion; between end of third and beginning of seventh month it is called miscarriage, and later on premature labor. The causes of abortion are various. In some excitable women the uterus is so irritable that the slightest disturbance, whether mental



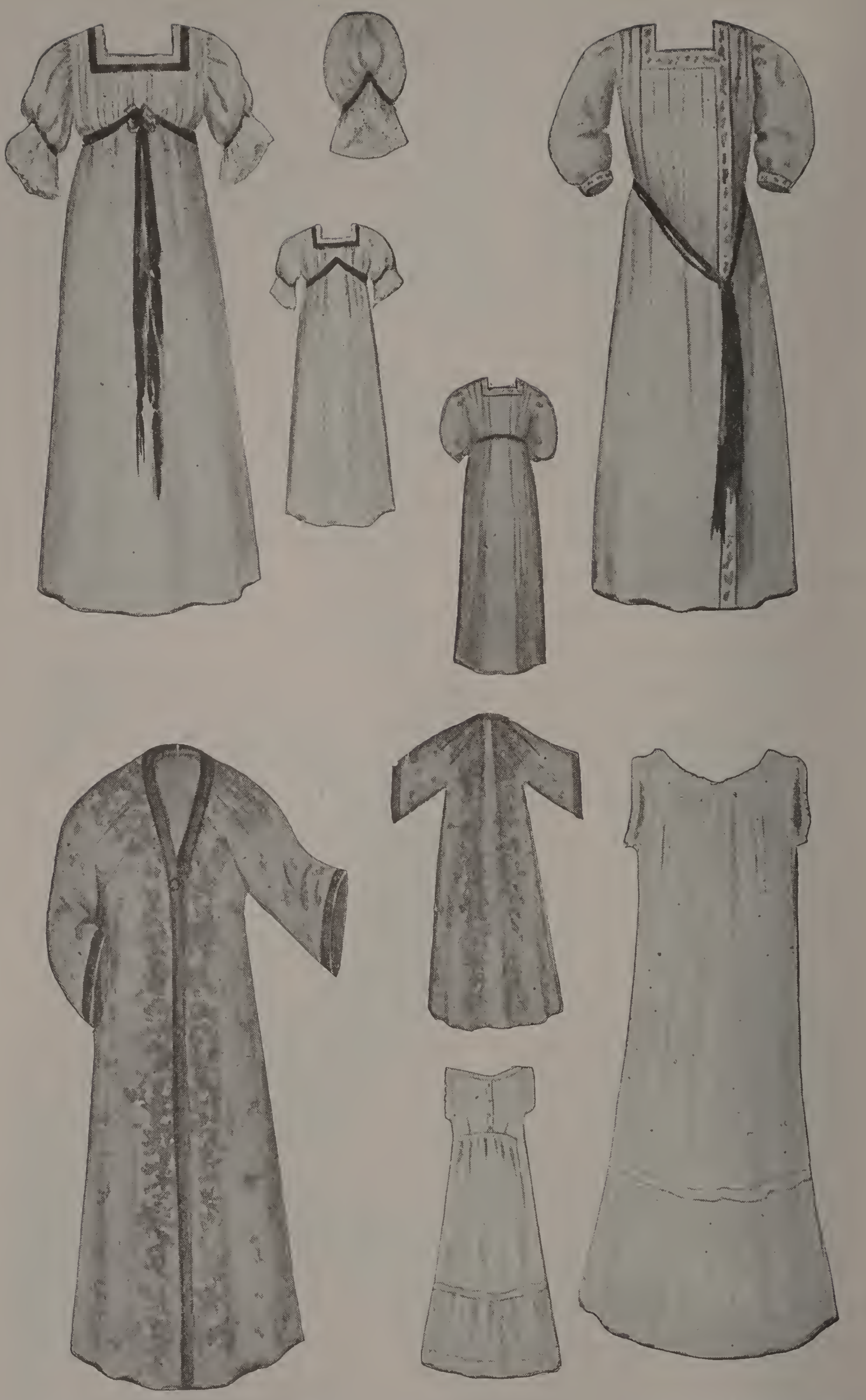
Above, suitable coats for maternity wear, emphasizing the large collars to balance the figure. Straight lines down the front and unshaped at the back. Below, a suitable and simple round cape, with details of collar and shoulders, and below, at the right, a maternity skirt, in case economy demands such a garment. It is regulated by a shirr-string on the inside of the back.

or mechanical, will produce an abortion. Usually, however, death of the ovum precedes and is the cause of abortion. The death may be due to a disease of the father (for instance, syphilis), to disease of the mother, to disease of the fetal membranes, or to accident. Abortion manifests itself by severe pain in the abdomen, which is followed by more or less severe hemorrhage. The blood usually appears in clots, and may contain particles of the ovum, or the ovum is expelled as a whole. As soon as the ovum has been expelled, hemorrhage and pain cease, and the woman recovers rapidly. To prevent abortion the woman should avoid all excitement and such physical exercise which is connected with a sudden jolt or jar of the body, or exercises which cause an increase of abdominal pressure, such as lifting heavy weights. Where abortion has set in, rest is of no value. On the contrary, the woman should be encouraged to be up and about, unless the hemorrhage be too copious. Usually abortion terminates favorably without any interference. Sometimes, however, when bleeding is protracted or severe, surgical treatment is necessary.



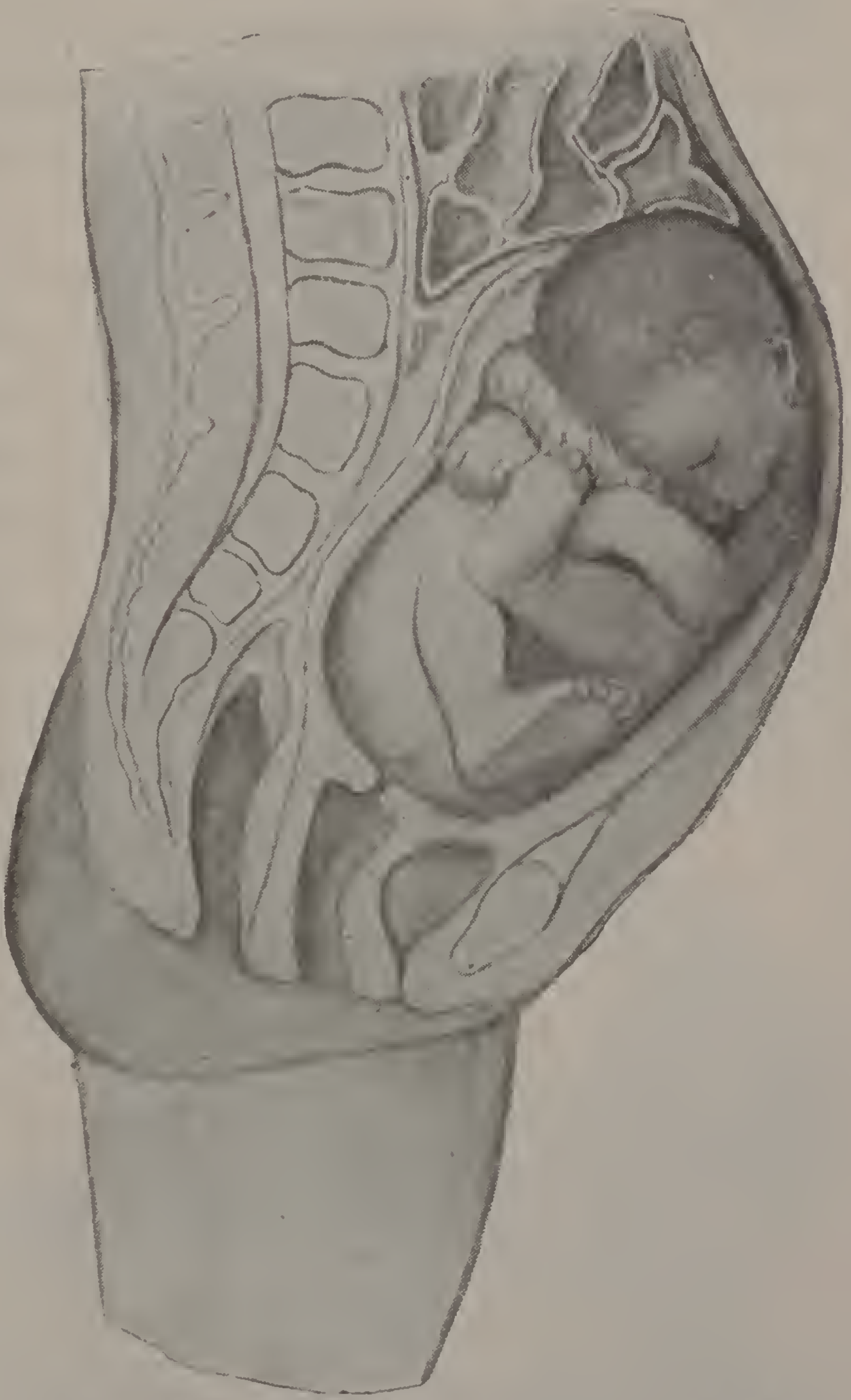
Normal attitude of the fetus in "head presentation."

EXTRA-UTERINE PREGNANCY.—In some, fortunately very rare cases of pregnancy, the impregnated ovum, for cause unknown, finds lodgment and begins to



Above, suggestions for maternity dresses for house or evening wear, showing back views and sleeve in the first. Below, a simple but graceful kimono, and combination corset-cover and petticoat, with back views on smaller scale.

develop in some part of the abdominal cavity outside the uterus, usually in the tube, sometimes in the ovary, or more rarely, in some other part of the abdomen. The resulting condition is called extra-uterine pregnancy. During the first few weeks of extra-uterine pregnancy nothing unusual will occur. There may be cessation of menses, vomiting, and all the other early symptoms of pregnancy. The ovum will proceed in its development until about the end of the second or beginning of the third month., At that time the woman usually begins to complain of sharp shooting or drawing pains in her abdomen and lower extremities. These, however, may be entirely absent. Very rarely the ovum proceeds in its development until full term; in such case labor pains will set in, but of course labor does not take place; instead the ovum bursts and a profuse internal hemorrhage follows. Usually, however, an extra-uterine pregnancy ends at some time between the third and sixth month of pregnancy in one of two ways: either the fetus dies, the liquid of the ovum is slowly absorbed, and the fetus changes into a dry tumor, or the ovum bursts and causes an internal hemorrhage. Such occurrence is marked by a sudden and very severe abdominal pain and collapse. If left to itself, this condition



A breech presentation, more unusual and also more difficult to manage than a head presentation.

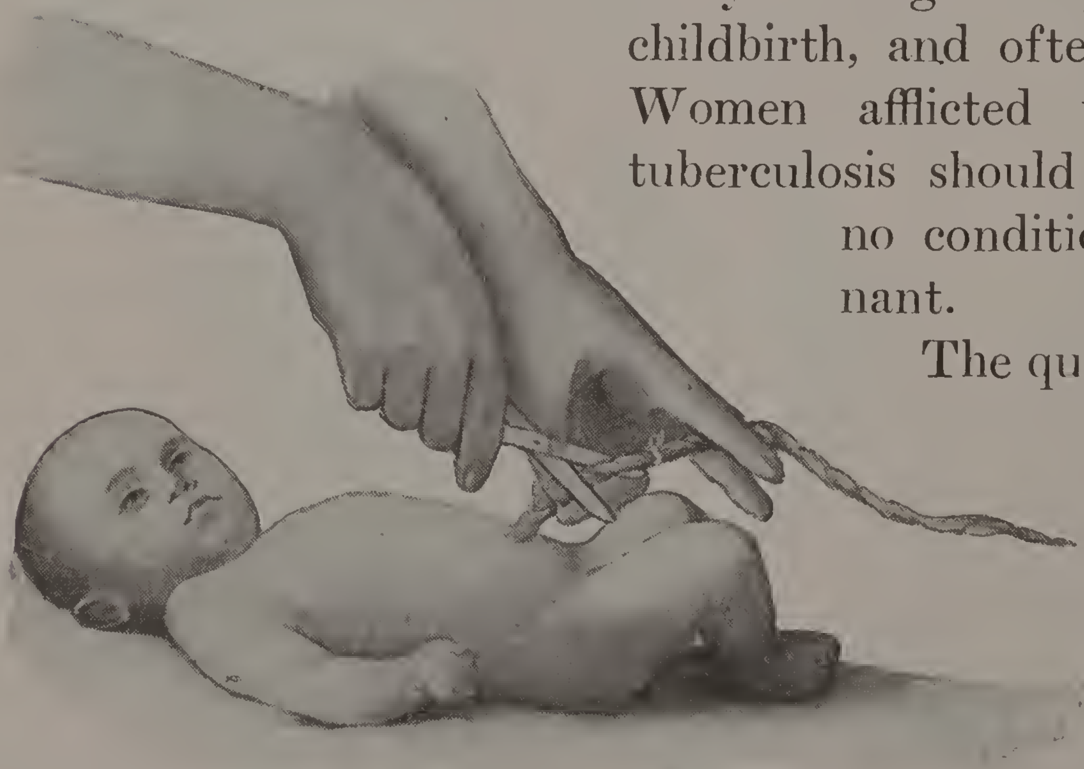
will result in immediate death in two-thirds of the cases, while the other one-third will often suffer from resulting disease. As the organism can not rid itself of the ovum without outside help, surgical treatment should be instituted as soon as the condition is recognized.

Intercurrent Diseases during pregnancy are apt to have an untoward effect upon the latter. Febrile diseases, such as grippe, pneumonia, typhoid or scarlet fever, will often cause death of the fetus with resulting abortion.

Women suffering with heart disease will require special attention during pregnancy. We have seen that even the normal heart has extra labor to perform in pregnancy. Where the heart is diseased at the outset, it may not be able to respond to this demand and symptoms of heart failure may follow. This may be guarded against by the avoidance of all sudden exertions and by gradual training as described in the chapter on heart diseases.

In women afflicted with chronic lung disease such as bronchitis, emphysema or asthma, the disease will often become aggravated by pregnancy. Tuberculosis of the lungs almost always advances very rapidly during pregnancy, and especially during the period following childbirth, and often becomes fatal. Women afflicted with pulmonary tuberculosis should therefore under no condition become pregnant.

The question of the general treatment of illnesses during pregnancy by fasting and other vigorous natural methods is one that will often arise. Sickness at this



Method of cutting the umbilical cord. The cord is first tied tightly (see page 2587), and then cut with sterilized scissors. Only one end of the cord is tied after it is cut.

time should be treated the same as at any other time, and if physical culture methods are used it will not last long. The unusually active function of the body at this time will very quickly overcome disease if conditions permit.

Labor.—About forty weeks, or, less exactly, nine solar months from the period of conception, the fetus reaches full maturity and labor begins. Labor is usually divided into three stages. During the first stage the neck of the womb becomes slowly and gradually distended and the orifice of the womb opens widely. When these changes have about reached their limit the fetal membranes burst and the liquid surrounding the fetus (amniotic liquid) escapes. This ends the first stage. During the second stage the fetus is born. After birth of the fetus the placenta is expelled from the uterine cavity. This constitutes the third stage of labor.

The first stage is usually ushered in by a sensation of more or less sharp radiating pains in the abdomen, accompanied by a dull pain in the small of the back and a drawing pain in the thighs. Women giving birth to their first baby may feel these pains weeks in advance of the actual onset of labor. They are at first very short in duration and occur at long intervals, but gradually become prolonged and frequent; we speak of good pains, when each lasts about one-half to one minute and when they occur at intervals of about three to five minutes. The pains are due to a cramp-like contraction of the muscular body and upper part (fundus) of the womb, forcing its contents downward. As the contents are at least in great part liquid, the effect is similar to that produced by pressure upon a rubber bag filled with fluid: the weakest parts of the walls will give in and distend to their limit. Thus the walls of the neck of the uterus become thinner and thinner,

Tied umbilical cord of child day after birth.

Umbilical cord of child ten days after birth.

first the inner, then the outer orifice of the neck opens, and the fetal membranes protrude through the gaping orifice. Finally these can not withstand the pressure of the amniotic liquid any longer and rupture. The liquid escapes and the part of the fetus nearest the orifice, usually the head, enters it. The average duration of the first stage of labor is six hours, but it may last twenty-four hours or longer, depending on the muscular action and upon the rigidity of the cervix.

During the last few months of pregnancy the fetus has assumed a fairly permanent position. Owing to its floating in a liquid medium it settles with its heaviest part (head) downward, and when the membranes burst at the end of the first stage of labor this part enters the orifice. It is said to have engaged in the orifice. Now the contractions of the womb become even more intense and the head is forced out of the womb into the bony canal of the pelvis, lined by the vagina, toward the vulva.

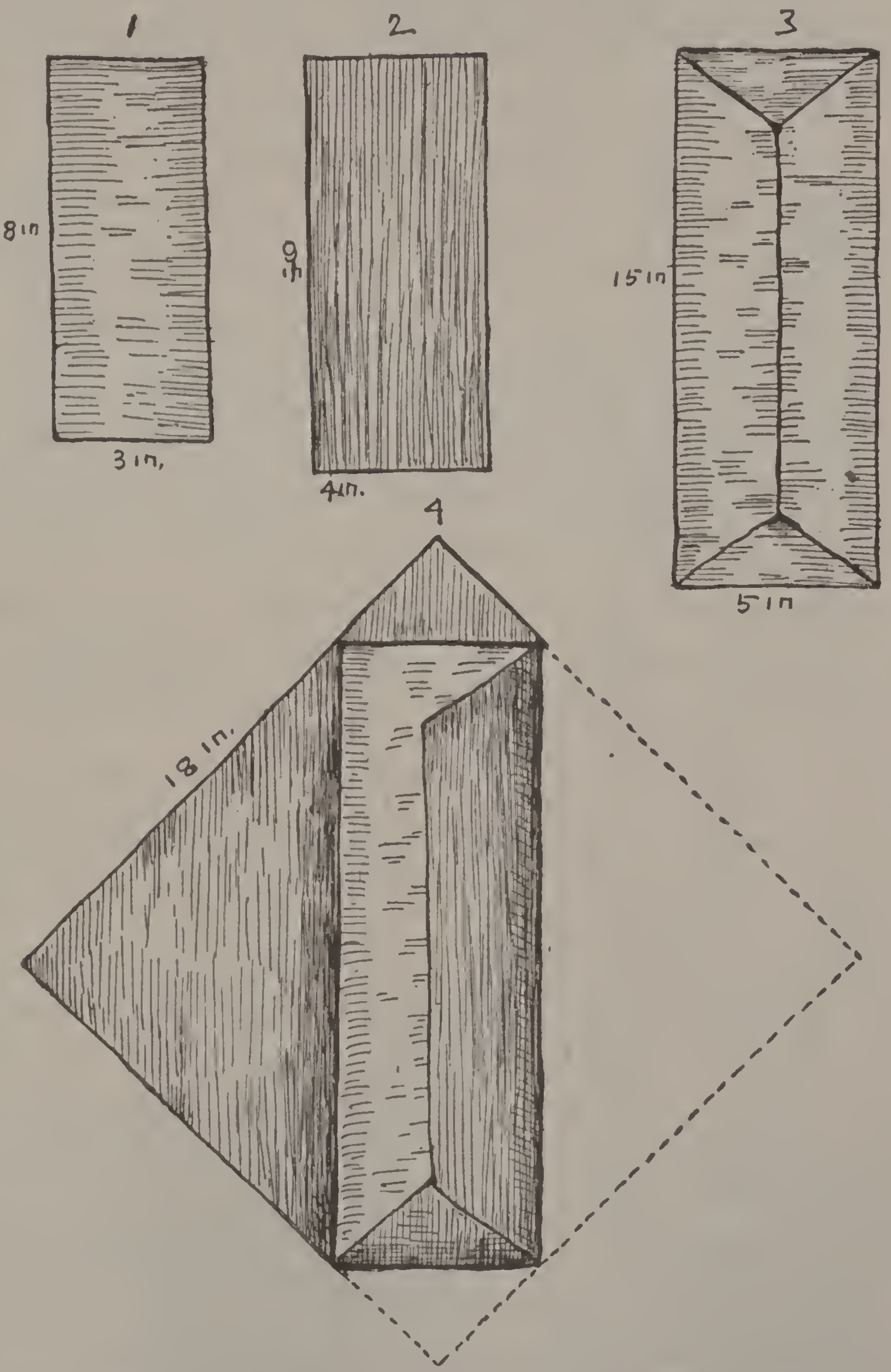
As the head proceeds on its course, it begins to press on the rectum, causing a desire to defecate. The muscles of the abdominal press now come into play, and by contracting at each pain help to express the fetus. Soon the fetal head (scalp) begins to show with each pain in the entrance of the vagina. The on-moving head now rests on the soft tissues between rectum and vulva (the perineum). The latter stretches under the enormous and steady pressure; at the same time the head slowly turns upward and after a few strong pains, the largest diameter of the scalp enters the vulva, the face resting now on the perineum. With the next pain the perineum slips over the face and the head is born. After another minute or two the rest of the body follows. The new born babe is still connected with its mother by a pulsating cord, but under the stimulation of the cold air it begins to breathe and the pulsation of the cord ceases. The cord is now tied and cut. This ends the second stage of labor. It usually lasts about two hours.

In a normal case of labor, the womb now contracts into a round, hard mass. An interval of rest, lasting about one-half hour, follows, during which the woman partly recuperates her forces. Meanwhile the placenta becomes detached and when the pains set in again, a few contractions usually suffice to expel it with all the membranes. This terminates labor.

The exhausted woman now sinks into a deep, wholesome sleep, from which she wakes refreshed in a few hours.

Management of Labor.—We now come to one of the most important phases of our subject. What should be done when labor is imminent and during labor? In the first place a person well versed in the management of such cases should be engaged in ample time before the onset of labor. Of course we would recommend a practitioner who is a believer in natural methods, but where such is not obtainable a regular midwife or physician must by all means be engaged.

Having done this, the woman will naturally turn her cares to the preparation of the various supplies needed in labor. The following list represents the mini-



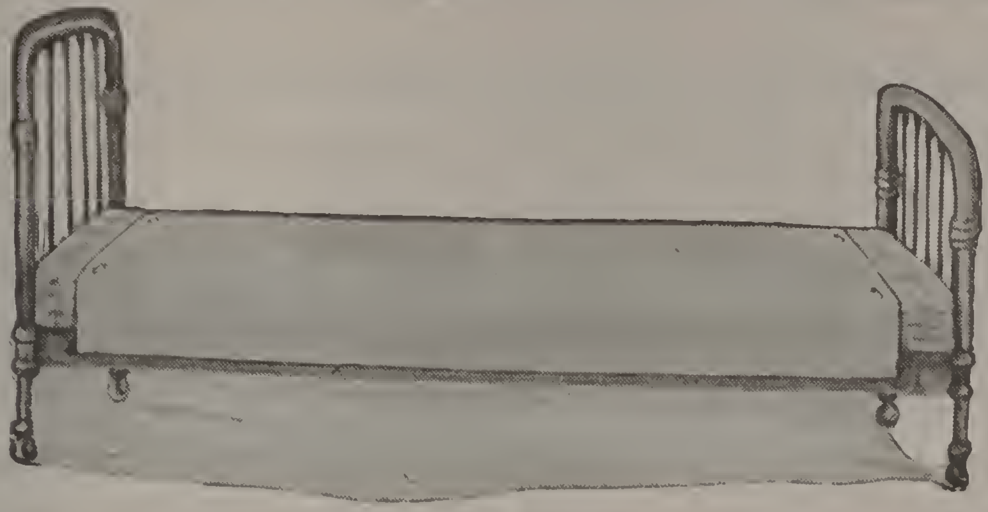
Pad to go between thighs after delivery. 1. Pad of antiseptic absorbent cotton. 2, backing of sterilized gutta percha or oiled muslin, one inch larger each way; 3, completed pad enclosed in piece of muslin 18 inches square, with additional cotton to make the pad 15 inches long; 4, method of folding. The whole pinned with safety pins to abdominal binder.

mum of supplies required and will serve as a guide: Vinegar (4 ozs.); tincture of green soap (4 ozs.); boracic acid; a new, large, coarse sponge; a fountain syringe (sterilized by boiling); bed-pan; new, soft rubber catheter; one pound of absorbent cotton; small bottle of carbolized vaseline; 1 dozen towels; large rubber cloth (2 yards by 1½ yards); small rubber cloth (1 yard square); unbleached muslin for abdominal binder (2 yards); cheesecloth (20 yards); plenty of old, clean linen, sterilized by baking in oven; large and small safety pins (2 doz. each); fine, soft sponge; talcum powder; castile soap; several changes of baby's clothes; soft pillow; two flannel bands for baby; diapers (4 dozen).

The cheesecloth and cotton serve to prepare two or three large absorbent pads and several dozen small occlusive pads. The large pad consists of several layers of cotton, two to three feet square and two to four inches thick, covered by cheesecloth and loosely quilted. The occlusive bandage is made by enclosing two thicknesses of cotton seven or eight inches long and four or five inches wide in one-fourth of a yard of cheesecloth so folded as to make a pad sixteen or eighteen inches long and four or five inches wide, the edges being stitched. All pads are wrapped up in paper and baked, and kept sterile until required.

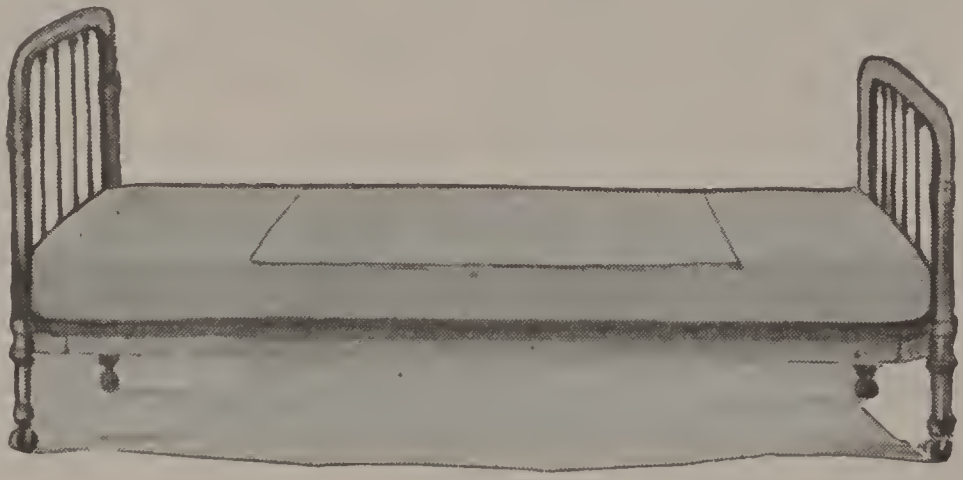
With the first sign of approaching labor the physician in charge is summoned, and he having ascertained that labor is in progress, a rectal enema of one pint of salt water is administered. If there be time, the woman takes a warm bath with soap. In any case her external genitals are thoroughly washed. She may now remain on her feet and walk about, comfortably dressed, resting occasionally and taking light nourishment.

Meanwhile the bed is prepared by the attending nurse. An airy, warm room is selected. The bed should preferably be narrow and high, with a firm mattress. It is placed so that it can be approached from all sides. The rubber sheet is stretched over the mattress, fastened with safety pins and covered with a sheet which is well tucked around and under the

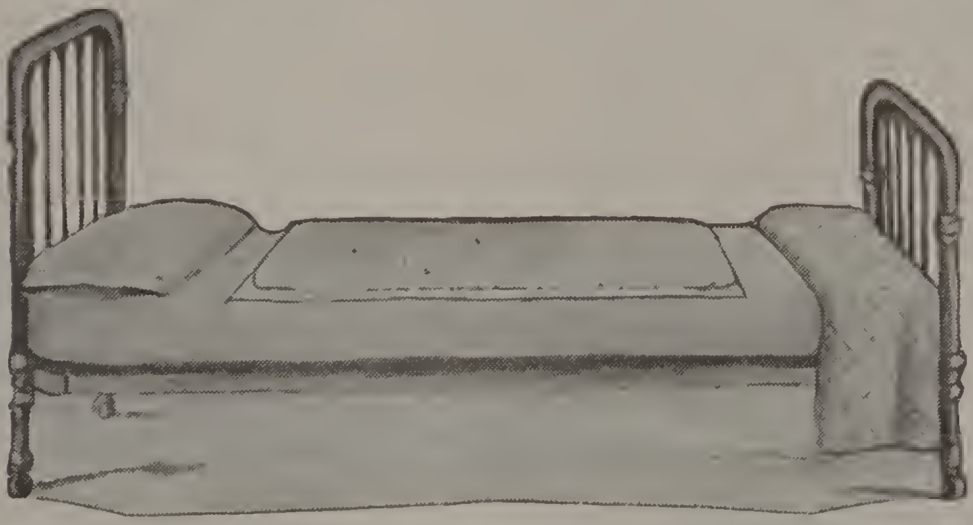


Preparation of Childbirth Bed. No. 1.—The large rubber cloth is first spread over the mattress and fastened with safety pins.

mattress. This constitutes the permanent bed. The temporary bed consists of a draw sheet and the small rubber sheet underneath. On top of the small rubber sheet and draw sheet is placed a large absorbent pad. A soft, flat pillow at the head and a sheet or an old but clean blanket to cover the patient complete the outfit. A chair is placed at the foot of the bed. On the floor, which is covered with oilcloth or thick paper, a bucket is placed to receive the waste. On a small table within easy reach is placed a bottle of vaseline, a half-dozen towels, a large sponge, a pair of sterile scissors and sterile silk tape and a basin filled with a sterile solution of boric acid, containing several dozen pledgets of cotton.



Preparation of Childbirth Bed. No. 2.—The large rubber cloth is then covered by a large sheet which is well tucked under the mattress as shown here, after which the smaller rubber cloth is placed across the center of the bed, on top of this sheet.

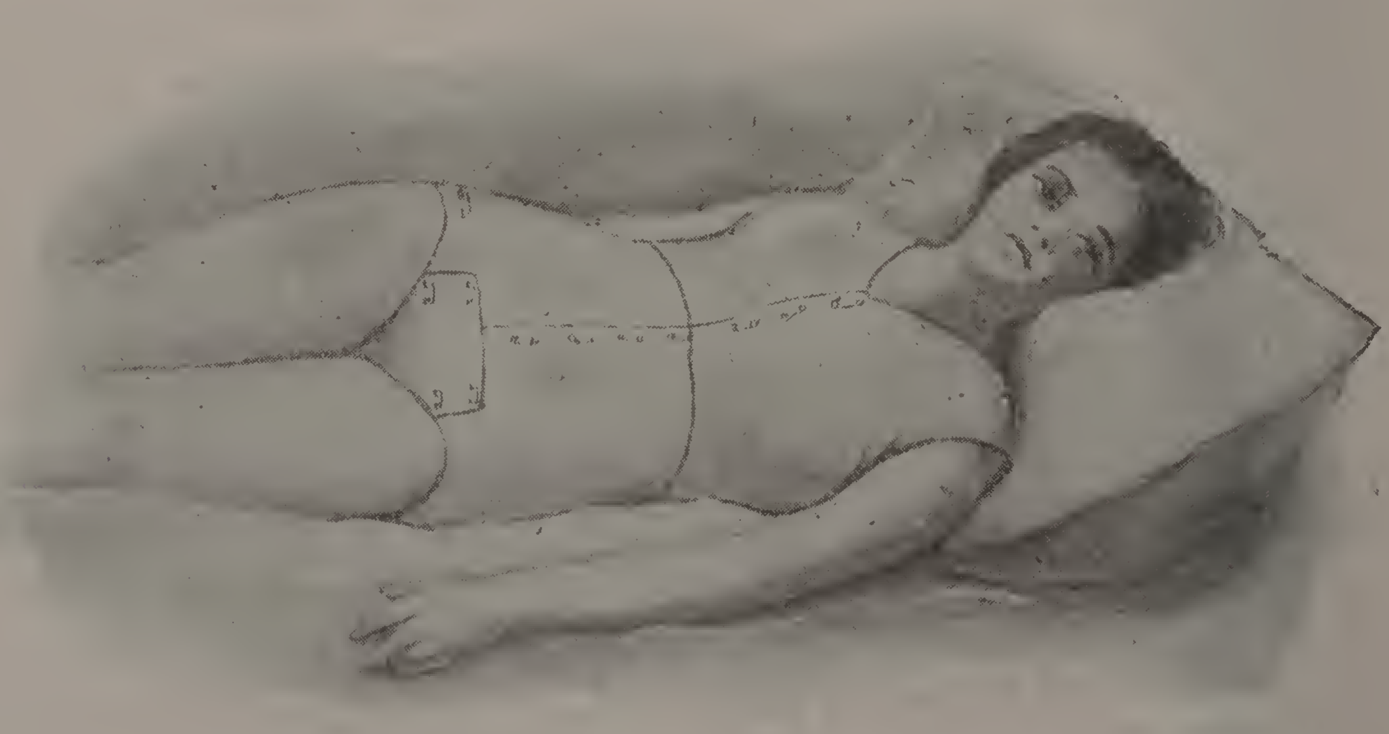


Preparation of Childbirth Bed. No. 3.—Finally, on top of this second small rubber cloth is placed a large absorbent pad, as shown here. A draw sheet may be placed over the small rubber cloth and under the pad, if desired. To this is added a flat soft pillow and a suitable clean covering placed in readiness across the foot of the bed.

The woman is usually encouraged to remain on her feet until the external orifice of the cervix has dilated to about the size of a silver dollar. Where the pains are not strong, it may be to her benefit to stay up longer. As soon as in the judgment of the attending physician the bag of waters threatens to rupture, the patient is placed in bed. A premature rupture of the fetal membranes must be guarded against as much as possible, as an escape of liquid at an early stage means a difficult and prolonged labor, which is commonly known as "dry labor." Usually the membranes burst when the orifice is fully dilated; the large sponge is held in readiness to catch the outflowing liquid.

During the second stage of labor the patient must by all means remain in bed; and during the latter part of this stage she is uncovered. The pains now change in character from cramp-like drawing pains in abdomen, back and thighs to bearing down pains.

One of the most important features associated with easy delivery is frequently ignored. With the onset of each pain during this stage of labor, the lungs should be filled to their greatest possible capacity. Draw in as much breath as you possibly can with each inclination. This one suggestion if closely adhered to will greatly increase your ability to "bear down" and thus insure an earlier delivery. The air is suddenly expelled and after a deep inspiration the pressing is



Abdominal binder and pad between thighs fastened to it with safety pins. The former must not be tight enough to constrict the body, and may be held in place by attaching to a simple waist such as that shown here.

again resumed, to be continued until the pain ceases. This is repeated with each pain. Some help can be derived from a roller towel tied to the foot of the bed, by letting the patient pull at it during a pain. The head descends now lower in the pelvis and presses on the rectum. An intense desire to empty the bowel is felt by the woman. Under no condition must she now be permitted to leave her bed in order to gratify this desire. If any pieces of fecal matter appear at the anus, they are wiped away by a pledget of cotton and thrown into the pail. Soon the vulva begins to gape and the scalp of the fetus begins to show. This occurs with each pain, but gradually more of the scalp appears. After about thirty minutes the perineum appears stretched to its utmost and the scalp becomes fixed in the vulva. Great care must now be exercised to avoid a serious tear of the perineum. A small laceration almost always occurs. This is not the case among savage women. There the perineum is more elastic and succulent, while the baby's head is small. But even with a less elastic perineum of the woman and in spite of the larger brain and head of the baby in our civilized condition, a serious tear can be avoided, provided the woman has passed through a normal pregnancy and expert help is present at her bedside during labor. A tear of the perineum usually occurs because the head advances too rapidly and the perineum has no time to stretch to its maximum. It can, therefore, almost always be prevented, if at the critical moment the woman is warned not to press, and the head is held back for a pain or two by pressure of the hand. Simultaneously the other hand rests on the perineum and pushes the head forward toward the symphysis. This procedure, which relieves the perineum of much pressure, is usually called "supporting the perineum." With proper support of the perineum the head is born with but slight or no laceration. At first pale, the new-born head soon turns blue and almost livid. Nevertheless there is no immediate danger to the fetus, and it is best not to interfere with the further natural progress of labor. Slowly the head turns with its face toward one of the thighs. With the next pain the neck and the shoulder nearest the symphysis appear, then the shoulder resting on the perineum rolls out and is immediately followed by the rest of the body. The new-born baby announces its arrival with a lusty cry. It is placed on its right side, with its face turned away from the mother, care being taken that the cord is not stretched tight. As soon as the cord stops pulsating it is tied secure about two inches away from the baby's abdomen and cut a little above the ligature. The other end of the cord need not be tied. The baby is now wrapped in a warm blanket and put in its crib.

Immediately after the baby is born the attendant places his hand on the woman's abdomen and compresses the womb, kneading and rubbing it occasionally in order to secure complete contraction and to prevent a hemorrhage. About one-half hour after completion of the second stage of labor pains set in again, and after a few minutes the placenta is expelled and caught in a prepared vessel by the attendant.

This completes labor. The woman's genitals are now washed with clean, sterile water and covered with an occlusive bandage, the temporary bed is removed and a binder and pad (see pages 2585 and 2588) is adjusted about her abdomen.

MENSTRUATION DURING PREGNANCY occurs in rare cases only. See *Menstruation,* page 2493.

MOST COMMON IRREGULARITIES OF LABOR AND THEIR MANAGEMENT.—In some, fortunately rare cases, labor does not take the natural course, described above, but is in one or more respects irregular.

Of all irregularities, a protracted labor, due to deficient pains, is the most important and the most common. While the usual duration of labor is from six to eighteen hours, it may in such cases be prolonged to twenty-four or even forty-eight hours, and will sometimes require surgical interference for its termination. Deficient pains are more common in women who have given birth to several children in rapid succession than in young women during their first childbirth. The condition is the result of a weakening of the uterine musculature, but may sometimes be simply the expression of nervous excitement. The best possible prevention is a regular life during pregnancy. When deficient pains do occur, a complete rest and reassuring the patient that there is no cause for anxiety will often help. In extreme cases the application of forceps becomes necessary.

Labor is sometimes much delayed by a lack of proportion between the dimensions of the child's head and of the parturient canal, *i. e.,* either the canal is too narrow or the head too large. Of the two, the first abnormality is more common. Usually we have to deal with some deformity of the pelvis, through which the latter has become contracted in one or more of its diameters. Deformities of the pelvis are sometimes due to a general under-development of the woman's skeleton, more often they are the result of a disease of the bones of the pelvis (rhachitis, osteomalacia), or a disease of the spinal column (hunchback) or of the hip-joint. The management of labor in a case of contracted pelvis is very difficult. When the child is of normal size or perhaps slightly undersized, and the deformity slight, natural birth will often take place in spite of the deformity. In more advanced cases the physician will usually be obliged to help the natural forces by either applying forceps or by performing version. The first operation consists in introducing a two-bladed instrument (the forceps) into the uterine cavity, grasping the head between the blades of the instrument and pulling at it until the head is born. Naturally the application of the instrument as well as the method of extraction require considerable skill. The operation of version consists in introducing the sterile hand into the uterine cavity, turning the child and extracting it by its leg.

In some very rare cases the pelvis is so narrow that neither of the above operations is available. Here sometimes it is possible to help the mother by inducing labor after thirty-six weeks of pregnancy, when the child's head has not yet reached its full size. When even this procedure is impossible, Cæsarean section becomes necessary. This last, very rare and serious operation, consists in opening the mother's abdomen and womb and removing the child through the wound.

Sometimes the difficulty of a narrow birth canal is not due to a deformed pelvis, but to some abnormal condition of the soft parts, such as a very rigid cervix, or a tumor lying in the pelvis and pressing on the vagina, or some other similar condition. In all such conditions quick action on the part of the attending physician may be required, and will usually result in successful labor.

In case the labor is delayed by a too large child, the methods employed are much the same as in ordinary deliveries. The choice of the method will depend on the degree of disproportion, and must always be left to the judgment of the attending physician. The general principle by which he is guided is to save the life of the mother first and foremost, and do her as little harm as possible. The life of the child is of second consideration, although it shall always be his aim to save it if he can do so without endangering much the life of the mother.

Here must also be mentioned the rare condition of increase in the size of the child, owing to malformations, such as development of monstrosities, or to disease, such as hydrocephalus. Monstrosities of various kinds may occur. Usually they consist in the multiple development of some part of the body; thus there may be a child with two heads, or with four arms or four legs. The extreme of this monstrosity are twins joined loosely by the front, side, or back (Siamese twins). Even such cases sometimes are delivered spontaneously, but usually complicated surgical operations will be required.

Where the head of the child is over-large on account of hydrocephalus, version is usually the required operation with additional tapping of the brain cavity through the spinal canal. Naturally in all cases of monstrosities the surgeon will choose the operation least dangerous to the mother without regard to the life of the baby.

Of other irregularities occurring in the first and second stage of labor, we must mention placenta praevia. This name is applied to a condition in which the afterbirth finds its attachment near or in the neck of the womb instead of at the fundus.

As a result, the placenta becomes detached at a very early stage of labor, and unusual bleeding occurs, which will become fatal unless checked. The treatment consists in packing the vagina tightly with sterile gauze and performing version as soon as the cervix has dilated sufficiently to admit the hand. Where packing does not stop the hemorrhage, the physician will not even wait for sufficient dilation, but dilate forcibly and perform version.

During the third stage of labor we may sometimes encounter cases where the womb shows some sluggishness in its contractions and retains the afterbirth. It is usually possible to assist the woman in such case by external manipulations; the attendant grasps the womb in his hands through the abdominal wall, and by compressing it steadily, is able to express the placenta. Sometimes, however, the attachment of the placenta to the inner wall is so close that above method will not suffice to express it. In such case the physician must introduce his hand into the uterine cavity, and by gentle manipulations of his fingers, sever all adhesions, when he will be able to remove the entire placenta.

After the uterus has been emptied of all its contents, it usually contracts firmly into a solid, hard, round mass. Sometimes, however, the muscle remains flaccid, and as a result, a dangerous hemorrhage follows. The way to prevent it is to stimulate the uterine muscle by friction and cold application. Where this has no effect, the womb is packed with sterile gauze for twelve to twenty-four hours.

MOTHERHOOD IN MATURE YEARS.—See *Age—Its Effect on Childbirth.*

PAINLESS CHILDBIRTH.—Although comparatively painless childbirth is a possibility in some instances, it cannot be made certain in all cases by any means. Much may be done in this direction by following a suitable diet, including considerable uncooked food, an outdoor life, suitable exercise and other conditions which make for the highest degree of health, strength and elasticity of tissue. Probably the most effective immediate measure in this direction is the hot sitz bath, taken two or three times a week for the last month, and taken for a half hour or more when labor pains begin. The immediate effect to to produce a relaxation of tissues which is favorable to an easy birth. There appears to be a tendency to a larger loss of blood following such a hot sitz bath immediately preceding birth, because of the dilated condition of the blood-vessels, and it may be wise to avoid the bath in the case of a weak woman, or one who is known from previous experience to be subject to free hemorrhage. In the ordinary case, however, especially if one is strong and vigorous, there is nothing to fear in this direction, and the birth will be made much more comfortable.

It is not to be expected that civilized women can have such an easy time as the savages, on account of the larger head common in intellectual races. The question depends a great deal upon peculiarities of individual build, for though physical culture methods will reduce the trials of parturition one-half or more, and will make for rapid recovery, yet there may still be some who will have a more or less difficult time. Among those who give no attention of any kind to their health, there is a certain proportion who have a very easy time, in spite of their weakness, because of a favorable build. It is really well to have measurements of the pelvic bones taken by a competent expert in obstetrics.

Massage of the abdominal walls with olive oil will be of much assistance in giving them elasticity and also in preventing the scars which often come with the stretching of the tissues.

PRACTICAL DETAILS OF PREPARATION FOR CHILDBIRTH.—The following extracts from an account of the experience of Maude Osborn Howatt in her first childbirth, contributed to the pages of *Physical Culture* Magazine, should prove of practical value to prospective mothers.

"I was in good health when I married, but when I decided to have my baby I took particular care of myself. I determined that I would have a painless childbirth, if such a thing were possible.

"One difficulty that presented itself was my slight build, my pelvis being two inches smaller than that of the average woman. But knowledge of the natural diet—nuts and fruit—came to my rescue. I knew that if I lived on that diet the baby probably would not be abnormally fat. Then by increasing the amount of fruit and lessening the amount of nuts, the bones of the baby wouldn't become too hard from excess of proteid.

"I had heard that women who are excessive meat-eaters had had exceptionally hard and long labor pains, due to excess of proteid, thus hardening the bones of the fetus. Fortunately, I had been a vegetarian for three or four years and my husband had been one for sixteen years.

"I had none of those distressing symptoms that generally accompany gestation. Neither did I have those abnormal cravings that most women have.

"I wanted oranges, apples, tomatoes and grapes. I ate these in quantity. I did eat some nuts, generally walnuts or pecans. I will add that I realize more than ever how wrong it is to urge a pregnant woman to eat unless she so desires.

"When friends heard that I sometimes ate only one meal a day and that I practically lived on fruit, they told me that I might starve the fetus. But I found that if I tried to force myself to eat more, or ate things that I didn't relish, I became nauseated. Later I read that as the average fetus grows at the rate of but half an ounce a day, there was no danger of starvation in that quarter.

"My diet wasn't the only thing that was different from the routine of the average woman, for I indulged my fondness for long walks, every day, until the day of birth. I spent some time in the Northwest, where, in the fall of the year, rain falls almost daily. I took my daily walk in spite of the downpour."

Of course, it should be borne in mind that a change to a diet and mode of living of this sort must be adopted with care. The details as to diet and general regimen to be followed by the prospective mother given elsewhere in this chapter, should be carefully considered, and no radical change of living adopted without gradual preparation. Mrs. Howatt describes the culmination of her own labor as follows:

"It was about 1:30 when I retired. I was still unable to sleep. The pressing returned. I decided that something must be wrong and that it would be wise to have the doctor. I hesitated for a long time before waking the folks. But when a stronger pressure came I sent for the doctor. This was no sooner done than I felt a sharp pain. I felt the baby's head come. In three or four minutes I had another sharp pain and the baby's whole body was presented.

"In about twenty minutes the doctor arrived. Needless to say, he was a surprised man. I felt splendid—as soon as the doctor cut the navel string I sat up in bed. I was advised to lie flat on my back for ten days. I staid in bed just nine days, but I sat up on the seventh day, bathed myself on the ninth and was downstairs on the tenth day.

"Now, I cannot say that I had a childbirth absolutely painless, but I can say it was nearly so.

"Some folks suggested that I might jeopardize my chances of having milk for my little one unless I ate meat and eggs, or drank milk. But seventy-two hours after the birth my milk came rich and creamy, and I have always had more than the baby could use. I have been asked if we lived up to the physical culture principle of 'living the continent life, except when procreation has been desired and prepared for.' We did, and I believe that such a course plays an important part as to the welfare of the woman during gestation, parturition and also during nursing."

SHOES.—See *Clothing.*

SLEEP AND REST.—Plenty of sleep and rest will do a great deal for the pregnant woman, for under the circumstances she often finds that she needs even more sleep than during the ordinary course of life. All conditions in the home should be so arranged that she may be able to enjoy all the sleep that Nature calls for. Visitors in the evening who have not sufficient sense to go home at a reasonable hour should not be tolerated. There are "stay lates" of this kind in every community, and they should be told early in the evening, frankly but without offense, that such and such an hour has been made bedtime for the present on account of the health of the wife and mother of the family. Aside from the mere matter of sleep, there should be plenty of opportunity for rest while awake, such as sitting in the open air for the afternoon. A reasonable amount of work may be kept up with advantage, but continuous overwork in the kitchen and home generally, is exhausting and undesirable.

Swelling of Limbs.—In some cases, swollen limbs and distension of the veins of the legs to the point of varicosity, are evidenced in the prospective mother. The treatment of varicose veins under these circumstances should be the same as described in Volume IV.

It may be well to have an examination of urine from time to time, especially if there is a swelling of the feet and ankles, or if there are other dropsical symptoms in any part of the body. Such swellings during pregnancy indicate an overworked condition of the kidneys, which may give rise to serious complications before or during birth. Uremia, perhaps attended by violent and sometimes fatal convulsions, is the result of the retention in the system of the wastes and poisons that should be eliminated through the kidneys. The preventive and also the remedial treatment is a series of full hot baths for removing these poisons through the pores of the skin. In a general way it may be said that swellings of the legs should call for hot baths from three to five times weekly, in addition to attention to diet, outdoor air and the other considerations mentioned in the course of this chapter. The water should be from 105 to 112 degrees Fahrenheit, according to the limits of comfort, and should last from ten to twenty minutes, though always getting out of the bath immediately at the first feeling of weakness or unusual discomfort. If the heart seems weak, take a bath at the temperature of the body, or 98 to 100 degrees. A bath thermometer will cost about fifteen cents and should be in every house. In addition to these baths, dry friction rubs, air baths and the wearing of light clothing will help greatly in insuring the desired activity of the skin.

The Lying-in Period.—During the period immediately following delivery the woman's organs rapidly resume their normal condition and function; at the same time her breasts assume a new function, lactation. Of all these changes, those affecting the genital tract are the most wonderful. The mucous membrane of the womb has practically all come away during childbirth, leaving a raw discharging surface from which at first blood is oozing steadily. The cervix and vagina, greatly distended, partly mangled and in places lacerated, produce a discharge of their own, which mingles with the uterine flow. Thus there is a steady flow from the woman's genitals, diminishing in quantity and changing in character as the repairing process advances. During the first few days the woman will usually require six changes of napkins in twenty-four hours. The discharge, at first bloody, becomes serous on the fifth or sixth day and white (healthy pus) two days later. It has never any offensive odor. While the mucous membrane is being repaired, the body of the womb goes through a building down process, by the end of which it resumes its original size and shape. The numerous small rents heal spontaneously. Six weeks elapse before healing is entirely completed.

After delivery the length of time the mother remains in bed depends chiefly on her physical condition. Ordinarily it varies from five to ten days. It is better to remain in bed a day or two longer. Cleanliness is most essential in her management. The woman's body should be washed daily. Her genitals should be washed several times daily, with sterile water, the hands of the nurse being previously sterilized. During the first few days absolute physical and mental rest are required. Gradually some liberties are granted. By the end of the first week the woman may sit up in bed and after a few more days she may be permitted to rise. The diet should be simple. During the first few days milk and cereals are given, gradually a more varied diet is permitted. There may sometimes be experienced some difficulty in urination. Hot poultices to the bladder may induce urination. If necessary the woman is catheterized twenty-four hours after delivery. Two days after delivery an enema is given; after this the woman's tendency to constipation is combated in the usual manner.

The greatest danger of the lying-in period is puerperal sepsis, commonly known as blood-poisoning. Where the condition has developed it will become necessary to institute the general treatment described in Vol. IV, under Sepsis and Septicemia.

By drinking a generous amount of liquids at such times, preferably taken hot or luke warm, this danger can be avoided. Milk diluted with water or an orangeade made like a lemonade, sweetened or otherwise, as desired, water sweetened with honey, or any wholesome drink can be recommended. The idea is to get a large amount of liquid into the system as quickly as possible.

Where the danger is really serious, it is sometimes safer to adopt an exclusive milk diet as described on page 1730, Volume III. This flushes the entire system and even in cases where remnants of the after-birth remain in the womb, this process of flushing the system, as adhered to in the milk diet, will usually successfully and naturally combat this serious danger. After a few days the menacing dead tissue will be ejected from the womb naturally and painlessly. The only objection to the exclusive milk diet in cases of this kind is sometimes noticed in the small quantity of milk that will be secreted for the infant when changing the diet. The mother's life under such circumstances, however, is of prime importance, and the child can depend upon cow's milk for additional nourishment in case this emergency appears.

I am firmly convinced that blood-poisoning, one of the most serious dangers associated with childbirth, can be remedied in nearly every instance by either of the two remedies mentioned above; either the very free use of liquids as previously advised, or by adopting the full milk diet. In twenty-four hours after beginning the milk regimen the most serious symptoms of blood-poisoning that sometimes follow childbirth begin to abate and within forty-eight hours thereafter the patient is usually normal.

In some cases where the quantity of milk prescribed cannot be taken, it may be necessary to give some additional nourishment in the form of an evening meal. In other words, milk could be taken until two or three o'clock and then a regular meal could be eaten in the evening, suitable to the appetite and requirements of the patient. Or a noon meal could be eaten, drinking milk in accordance with the milk diet régime, until say nine or ten o'clock in the morning, taking the midday meal about one o'clock, beginning the milk diet again at about four or five, guarding carefully against constipation.

THE CARE OF THE NEW-BORN CHILD.—It sometimes happens that the new-born child is asphyxiated, *i. e.,* does not breathe. Quick action is then required. The assistant takes the physician's place at the mother's bedside. The physician lifts the baby by its feet to facilitate the escape of mucus from the trachea and throat and cleans the throat of mucus with his little finger. He then tries to resuscitate the baby by a few sharp taps on shoulder and buttocks. If unsuccessful he at once begins artificial respiration. Next, the child is placed in a basin of warm water and a stream of cold water thrown on its chest. If necessary the procedure is repeated several times. The physician, having delivered the woman of her placenta, returns to the baby. He first examines the cord and, if necessary, reties it. Next the baby's entire body is wiped with a soft sponge dipped in warm olive oil. The child is then thoroughly examined to ascertain the presence of any injuries or deformities which might require immediate treatment. If there is the slightest suspicion as to the existence of gonorrhea in the mother a drop of a one per cent solution of silver nitrate is instilled in each of the baby's eyes. The cord is now wrapped up in sterile gauze and an abdominal binder adjusted loosely around the abdomen, after which the child is diapered and dressed. About the seventh or eighth day the cord, which has gradually dried up, falls off and from now on the child is bathed daily in a bath of about ninety degrees. The temperature of the bath may be gradually lowered until about the sixth week it is eighty degrees.

VARICOSE VEINS.—See *Swelling of Limbs,* etc.

CHAPTER VI.

HEALTHY BABYHOOD AND VIGOROUS CHILDHOOD.

THOUSANDS of infants die each year simply because their mothers do not know how to take care of them. Under proper conditions, the mortality rate among babies should be practically nothing, or, in other words, should be limited to the results of serious accidents. If the child comes into the world with the normal development of its organism and has the vitality to pass through this crisis and live, then it should grow up, in practically every instance.

The first rule to be followed after the arrival is to do as little as possible. The first care has been outlined briefly in the preceding chapter, in connection with the management of childbirth. The ordeal of birth is a somewhat exhausting one, and, after having the cord cut and attended to, the first thing the baby needs is, not a bath, but a good, undisturbed sleep. Attention to the cord and the navel should be given according to the instructions given under Navel, Care of, in this chapter, and instead of the immediate bath it is better to apply olive oil all over the skin of the little body. Then either dress or wrap up in a soft flannel blanket, and put to bed for a sleep, covering sufficiently for warmth.

The various subjects connected with the care of the baby are taken up in this chapter in alphabetical order, though for immediate reference following the birth we would call early attention to the instructions on Bathing, Feeding and the care of the Navel. However, all subjects connected with the care of the baby are of great importance, and one should not neglect the suggestions in regard to sleeping, clothing, exercise, premature children, diseases of infancy, attention to bowels, mouth, eyes, ears, nose and the various other matters taken up here.

AIR.—If fresh, pure air is important at any time of life, it is especially so in infancy, although it has been the general custom to keep babies confined in warm houses in the winter time and covered with veils when taken outdoors. In the rapid growth and great cell-activity of infancy, the supply of oxygen is a vital matter. The windows should always be open, even though it may be necessary to burn a greater amount of fuel in order to keep the fresh air warmed in winter. And especially should the baby be kept outdoors as much as possible, not only for airings but as a matter of everyday living. In fact, one should try to make some satisfactory arrangements for having the little one sleep outdoors altogether. (See *Outdoor Sleeping,* later in this volume.)

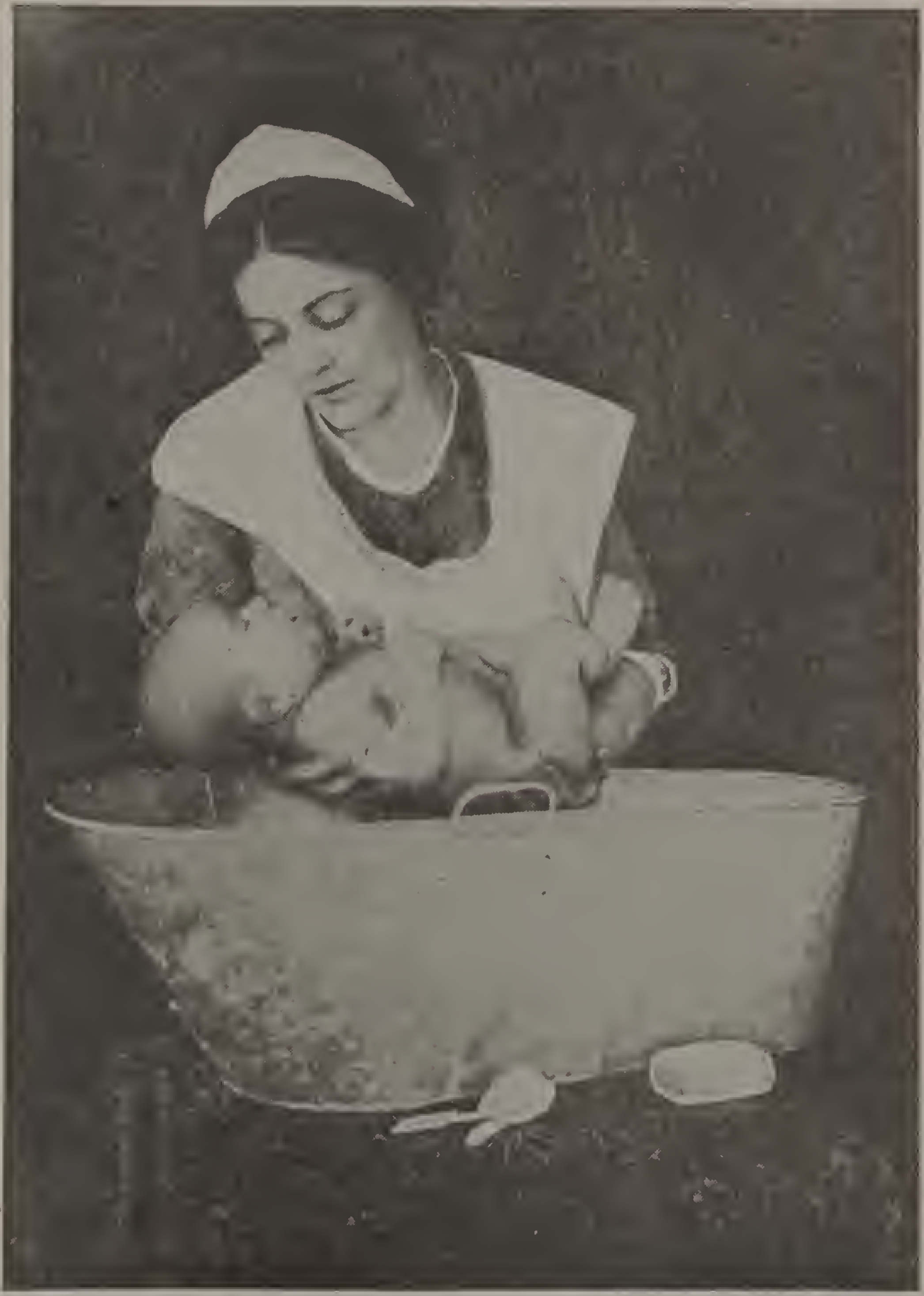
Air baths are recommended whenever the temperature will permit; they not only strengthen and toughen the little body, but favorably influence the respiratory function of the skin and invigorate the nerves. (See under *Bathing.*) In severely cold weather, however, sufficient clothing and bed covering should be used to maintain normal warmth, the test for this being warm hands and feet. Both clothing and bed coverings should be light and loose, woolen blankets and down comforters being lightest and warmest for the latter purpose. If necessary, when sleeping outdoors in winter, hot water bottles or heated bricks may be used to keep the little bed warm.

Nurseries should be well ventilated, but it should be remembered that the ideal nursery, indeed, the only proper nursery for any child, is the great and glorious outdoors, green and sunshiny in summer, or white and fresh and bracing in winter.

BATHING.—*The first bath* of the newly born infant is a matter of some importance. In the past it seems to have been the general custom to "wash" the baby immediately after birth. This may be a fairly satisfactory proceeding in the case of most vigorous infants, but it is usually a better plan to allow the child to have a good sleep before the first bath. In his journey into the world the baby has had a strenuous and exhausting trip, and is in need of a rest before his bodily energies are subjected to the necessity of recuperating from a bath.

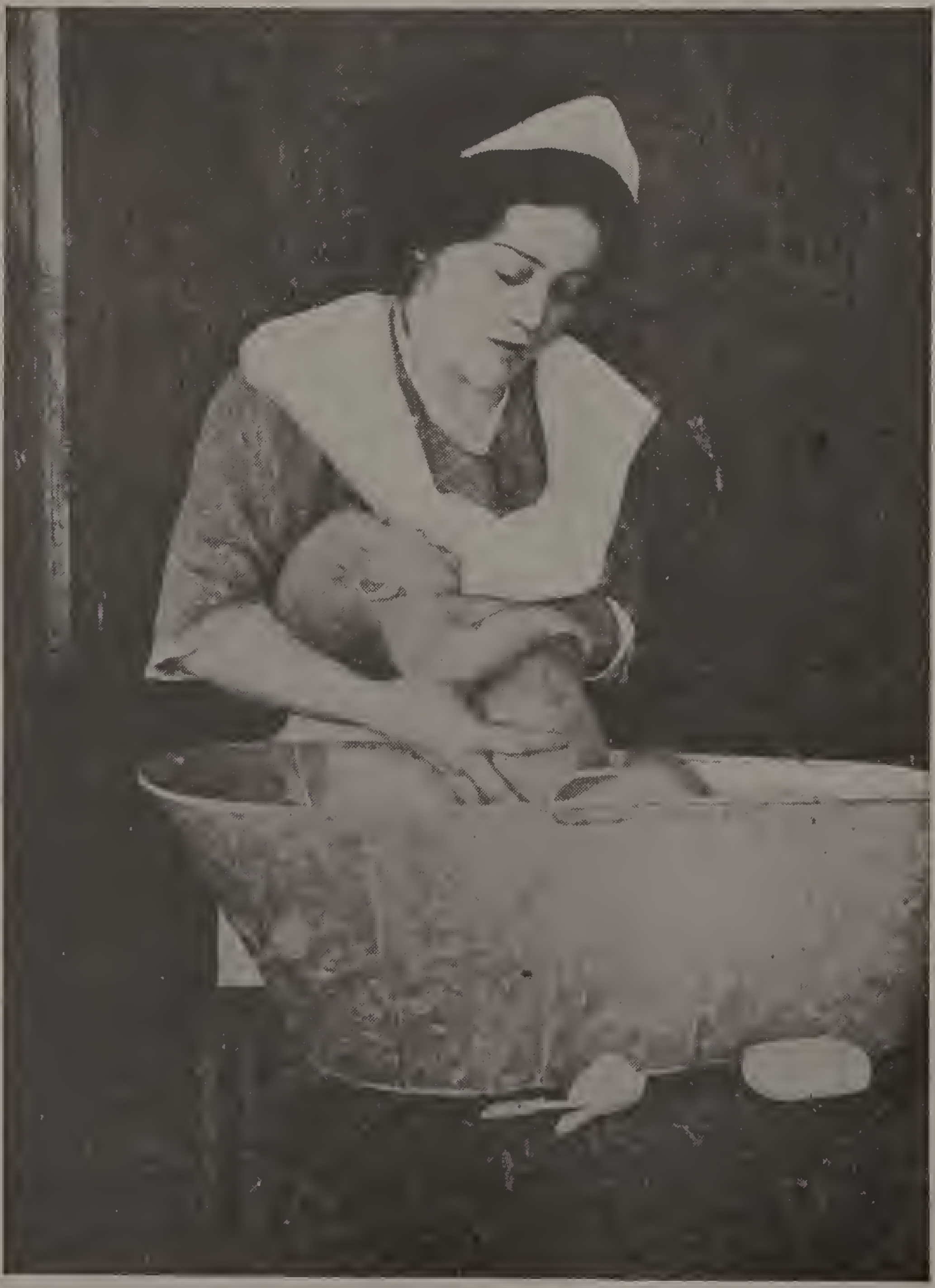
It is well to rub olive oil over the skin of the entire little body the very first thing, and especially should this be done if the skin is covered in part by the cheesy deposit known as the "vernix caseosa." After this the child should be diapered, and may be wrapped in a very soft flannel cloth or blanket, without the need of immediate dressing, and put down to sleep, wrapped and covered warmly. This olive oil may be applied after the sleep and before the bath, in some cases, but if there is any of the "vernix caseosa" on any parts of the body the oil will be of great help in removing it, and should be applied as soon as possible. Lard may be used for the same purpose, and is very effective. This cheesy matter mentioned may be entirely absent in many healthy babies, or it may be found chiefly around the joints, on the head, or even over a large part of the body. It should be very thoroughly removed, if present, for otherwise it may later cause irritation and inflammation.

The bath should preferaply be warm, or of the tem-



Correct manner of lifting an infant for placing in the bath or when handling unclothed. One hand supports the upper back and the wrist the head, while the other supports the hips and lower back.

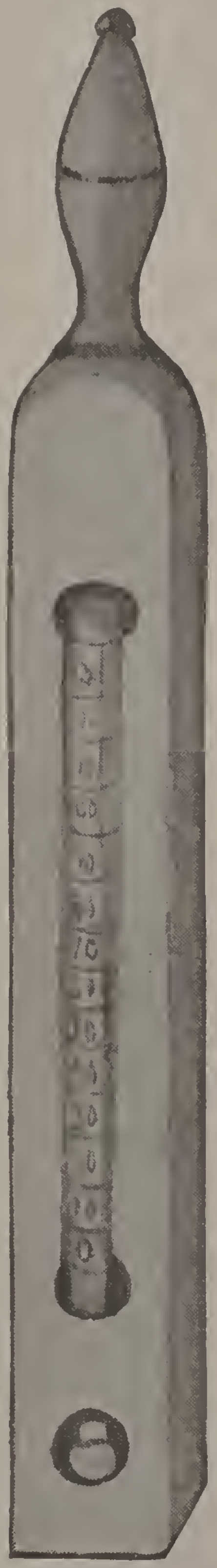
perature of the body, and should be given in a fairly warm room. There are some who advocate a cold bath for the baby from the very first day, and it is the practice of some Indian mothers to dip the "papoose" into a stream of cold water immediately after birth. But it is doubtful whether such a proceeding can be generally recommended. It would perhaps be a satisfactory plan for many vigorous babies, but for others of more feeble constitution it would be a great mistake. We should remember that bodily warmth is an important matter for the baby during the first few days, that even an ordinary bath will usually lower the bodily temperature of the infant one or two degrees, and that there are only a few pounds of flesh there altogether in which to generate the heat to resist and recuperate from the bath. A cold bath may prove to be a severe tax upon the young organism. "Remember that the baby comes from a warm place," as our grandmothers used to say, and that the temperature of the ordinary living room is itself perhaps twenty-five or thirty degrees colder than the surrounding


Incorrect method of handling an infant when giving a bath. One should not take hold around the body in this manner and leave the head unsupported.

temperature of the mother's body to which the little one has been accustomed.

The temperature of the room for the bath should be from eighty to eighty-five degrees. The water for the bath should be of the temperature of the body itself, or from ninety-five to one hundred degrees Fahr. It is advisable to secure a bath thermometer in order to make certain of the right temperature. It will cost very little, perhaps fifteen cents in the United States, and will be of value for general service in the household as well as for gauging the baby's bath. It will be of service in determining the temperature of an enema or douche, as well as being advantageous in various forms of the hydrotherapeutic treatment detailed in Volume III. But if you have no such thermometer, do not try to test the temperature with the hands. Use the elbow or other part to determine quickly if the water is too hot.

Before proceeding with the bath, one should have everything to be used conveniently at hand, including all of the garments to be put on afterward. The thermometer should be placed in the water beforehand, so that it will have time to register accurately. Only a pure castile soap should be used, never the perfumed or fancy varieties. A soft sponge may be used, but the difficulty of keeping it strictly clean and sanitary is such that a square of soft linen cloth is to be preferred. Soft old towels should be used, or what is better yet, pieces of old linen which have become soft from wear. Have two of these, preferably slightly warm and thoroughly dry. Never use damp towels. Have handy also a glass or bowl of boracic acid solution for the eyes and mouth, with sterilized absorbent cotton or tiny scraps of soft old linen.



Common type of bath thermometer, in a wooden frame, costing a small sum. Should be used to determine temperature of water for infant's bath and of general value to adults in all cold, warm and hot baths.

In giving the first bath, it will be well first gently to wipe off with a soft cloth the olive oil previously applied, and with it any of the "vernix caseosa" which will have been softened by the oil. In giving this first bath, also it will be well to keep the little body fairly well covered with a flannel, and to wash it a part at a time, drying each part before proceeding to the next. This plan may be continued for the first few days or until the umbilical cord has disappeared and the navel is entirely healed, after which it will be best to use a small baby's bath-tub. If the navel is comfortably and well dressed, it will be just as well not to disturb it in giving the bath these first few days. (See *Navel, Care of.*)

In the case of a feeble infant, or a premature infant, it will be better for several days simply to apply olive oil and wipe it off gently, and to avoid the use of soap and water entirely. This plan might be continued in such a case until the growth and gain in weight have indicated an increase of vitality.

After the first week it is well to use a baby's bath-tub, placed on a table, or high enough to avoid much stooping. Attention should be given to the proper method of holding the baby, for its comfort and enjoyment of the bath will depend much upon this factor. Do not leave the head unsupported and hanging down, as the inexperienced and awkward person would be likely to do, but support the head with the wrist while the hand is extended under the little back, the other hand taking hold of the legs and hips. Note the illustrations herewith, bearing upon this point. Placed in the water, the free hand can be used to wash the little body. It is not advisable to use much soap upon the tender skin of the baby in most cases, and it should be applied quickly and rinsed off very thoroughly in the water. The less time consumed in the bath the better. Taken out, the child should be enveloped in one towel which will take up most of the water, and the second towel may then be wrapped around, rubbing the hands over the towel. Upon taking this off it is a splendid plan to give the entire little body a gentle but thorough rubbing, and particularly the back, which will prove very invigorating and strengthening.

After the bath and rub, the eyes and mouth should be thoroughly washed with the boracic acid, using different scraps of cloth or dabs of absorbent cotten for each eye, after which the genitals should be similarly washed with boracic acid.

The temperature of the bath water, after the first week, may gradually be reduced to ninety degrees, and later to eighty, and the temperature of the room thereafter may be as low as seventy-five degrees. It will often be found advantageous to use the large regular bath-tub, if there is plenty of water, for it is easy to fill and drain. As the child grows older the great amount of water will make the bath a delight to kick and splash in.

Powdering after the bath is a common practice but not to be commended, though if it seems desirable for the sake of dryness, fine pure cornstarch is to be preferred to the scented commercial talcum powders. Powder, however, tends to clog the pores and should be avoided. If the parts about the groin and buttocks become reddened and inflamed, olive oil should be applied, which will protect the skin against wetting.

"Hardening" by means of bathing may be taken up gradually after the first month, or as soon as the baby shows a material improvement in weight and general growth. The best plan is to give a regular warm bath first, and then, immediately upon taking the child from the water, quickly pour over additional water a little cooler than that of the bath. Very gradually the second water may be made a little bit colder, a degree at a time, until it is down to seventy or even to sixty-five degrees Fahr., but not colder. While a baby is losing weight, or fails to gain, no such hardening process is to be attempted, or where the baby seems of feeble constitution or limited resistance it may be unwise. In other cases, however, it will invigorate and improve the circulation, and will develop the power of resistance against cold. It should always be enjoyed, as a pleasure, rather than feared as a punishment, for when the child dreads the cold water it should not be used. If he recuperates from it properly, he will delight in it.

The time for the bath may be determined by other conditions, though it should always be with an empty stomach. A good time to select is after the nap which follows the morning breakfast, which may bring the bath about nine or ten o'clock. By the time the baby is all dressed after the bath and ready for the long sleep which should follow it, he will probably be ready also for his second feeding of the day.

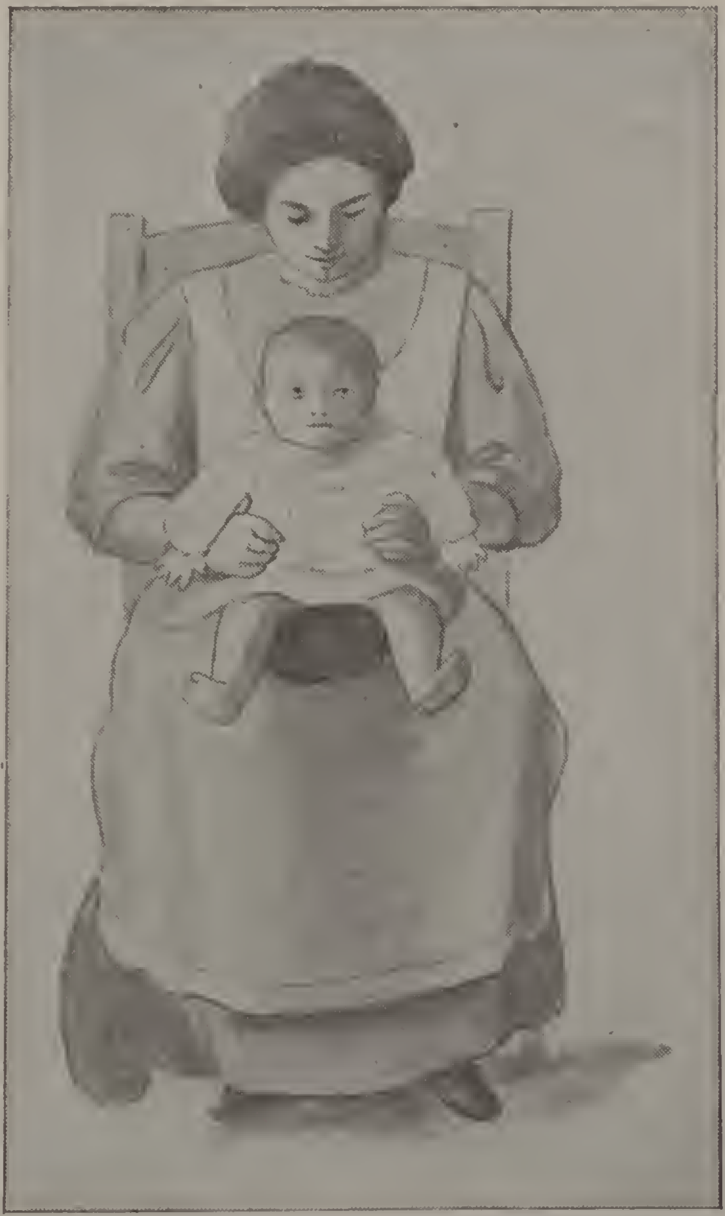
Older children will not need the warm bath every day. From the age of two years the warm bath may be given every other day, and later on may be reduced in frequency to twice a week, which is the most satisfactory plan for adults. The cold baths, however, should be given daily throughout childhood, and it will not be many years before the delights of open-air bathing and swimming in river, lake or sea will be a possibility. Remember that these cold baths for the child should be given in a comfortably warm room, and preferably after some romping exercise, when the body itself is thoroughly warm, though not overheated. Enjoyment of the bath is absolutely essential and the water should not be too cold to permit this. And even though the child delights in it, he should not be allowed to remain in the water too long. The shorter the bath, the more certain is perfect recuperation and a vigorous reaction. A short immersion in water a few degrees colder will bring about a better reaction than a prolonged bath in moderately cool water. These matters, however, depend upon the vitality and resistance of each individual child. If he dreads the cold water, a careful study of the general discussion of cold bathing in Volume III will probably enable you to understand the difficulty, and to so modify or arrange the bath that it may be taken with both pleasure and benefit. A vigorous rubbing after the cold bath will always be advantageous.

Air baths and sun baths are of great value both in babyhood and childhood. After the first week or two the child should gradually be made accustomed to exposure to the air, though in the beginning the room should be warm, perhaps eighty degrees, and the time of the air bath limited. Remember that it is very necessary that the child maintain such warmth and circulation that its feet and hands will be comfortably warm. A little rubbing will help in this, though later his own kicks and bodily movements will be sufficient for this purpose. Soon the child will prefer to spend nearly all of his time unclothed in an atmosphere of ordinary temperature. It will greatly improve the circulation, stimulate the excretory function of the skin through the greater activity of the pores, strengthen and tone up the nerves, and toughen the little body generally. It will go far in the making of a happy and healthy baby.

Exposure in winter weather should not be attempted, however, and on taking the little one outdoors at such a time, he should be thoroughly bundled up and kept warm. Air baths are great, but the baby should not be allowed to become chilled in too cold air.

The sun baths should be given with discretion, and the little body inured to them gradually. The vertical rays of the sun at noon on a summer day would be too harsh. In summer the rays of the sun in the early morning or late afternoon will be better. And the sun baths, like the cold water baths, should never be carried beyond the point where the child enjoys them.

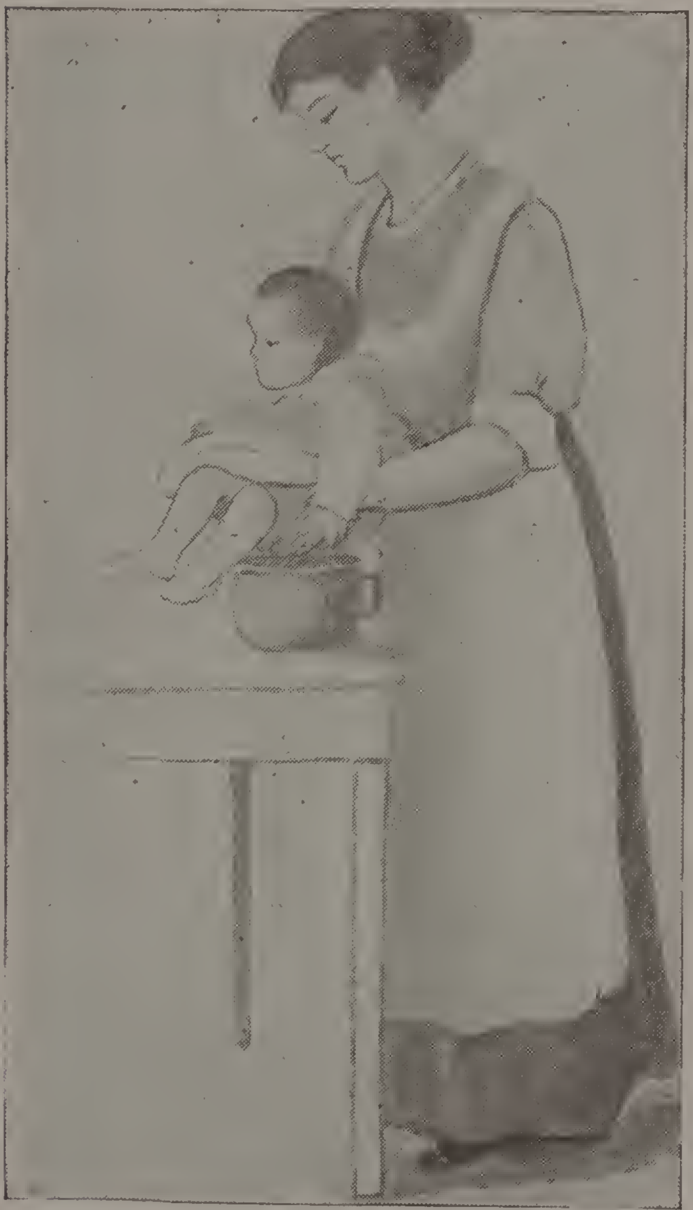
Bowels.—Regular activity of the bowels is of great importance in infancy, and the character of the stools indicates to a certain extent the condition of the alimentary canal and general health of the child.



A splendid way of training a young infant, regularly placing upon a vessel held between the knees of the nurse or mother, while the child's back may rest against her chest.

There is usually a movement of the bowels immediately after birth, or within a few hours thereafter, and there should be normally two or three each day for the first week thereafter. During the first two or three days a dark greenish, sticky substance is passed, known as *meconium,* but after alimentation is established the passage is a natural yellow and of a soft, smooth consistency. After the first week a healthy child may have either one or two movements each day, or perhaps even more.

Constipation should never be neglected, and for immediate relief a small injection of pure water, at ninety-eight to one hundred degrees Fahr. is the best treatment. This is best given by a fountain syringe, not placed too high. A bulb syringe is commonly recommended, but the too great pressure sometimes applied may be injurious. Water should never be *forced* into the rectum, even in adult life. The yellow soap suppositories recommended by our grandmothers were effective, but irritating and detrimental, removing natural oils. Glycerin suppositories are better, but should not be depended upon as a habit. A very satisfactory suppository is a small paper cone, not too stiff, and well oiled. Rotary massage of the abdomen is very valuable; this should be applied in the direction of the movement of the hands of a clock.



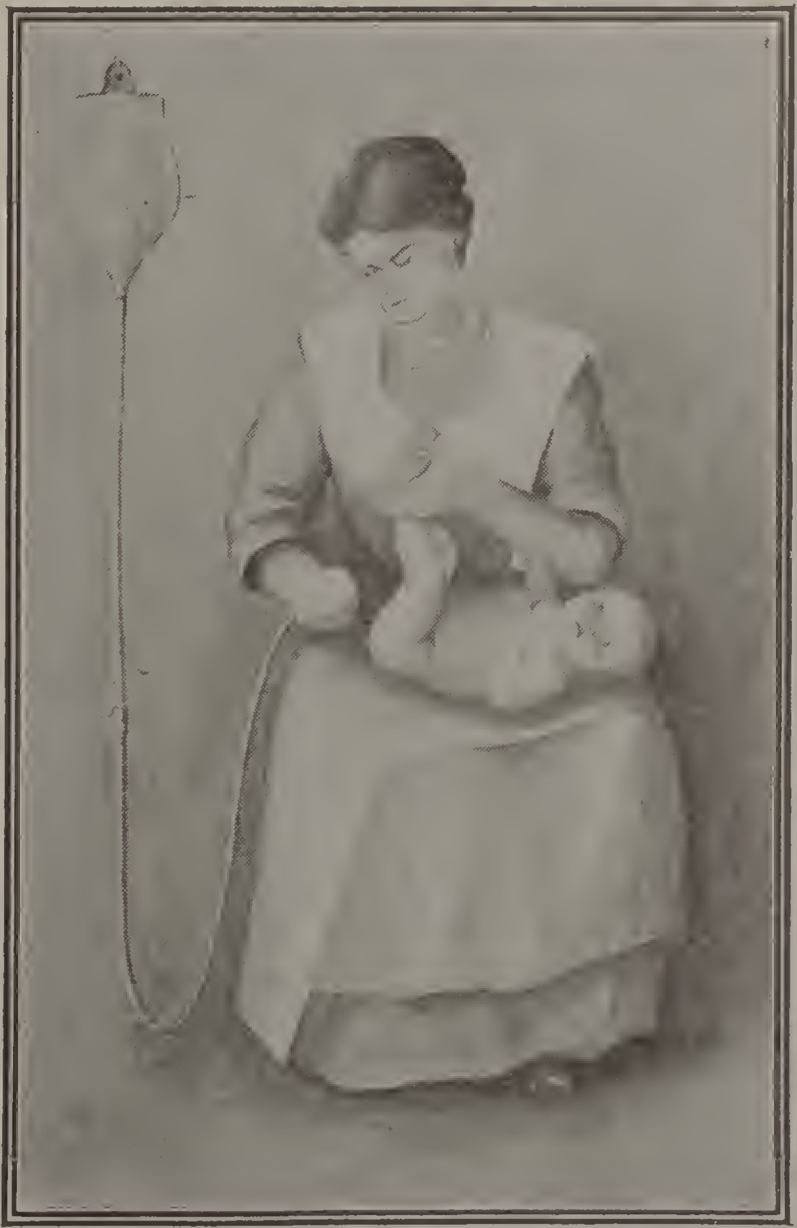
"Holding out" the baby, another simple and excellent way of training an infant in regular habits. The child's back should rest against the nurse or mother.

In chronic cases the diet should be depended upon.

When breast-fed, the diet of the mother must be improved. If bottle-fed, a little additional cream will usually solve the difficulty in the early months, while the use of a little strained orange juice midway between feedings after six months will often remedy constipation of that period. In giving modified milk, dilution with oatmeal water instead of barley water or plain boiled water will maintain satisfactory activity.

Diarrhoea, if present in a severe form, indicates a diseased condition. One or two enemas will help Nature's attempt to cleanse the alimentary canal of the irritating and unwholesome matter, and a fast of twelve to twenty-four hours, perhaps even a little longer, will be of great value, meanwhile giving water, distilled or previously boiled, freely. No drug treatment should be given to stop the diarrhoea, which is a symptom as well as a curative process. If there is only a tendency toward diarrhoea in a bottle-fed baby, slightly reducing the amount of cream will usually set matters right.

Training of the child in regularity of habits is important, as well as a great convenience to the practical mother, since in this way the unpleasant task of washing soiled diapers can be practically avoided. This training can be advantageously begun at the age of one or two months, by having the child's bowels move at the same time each day. The child can be held upon a very small chamber



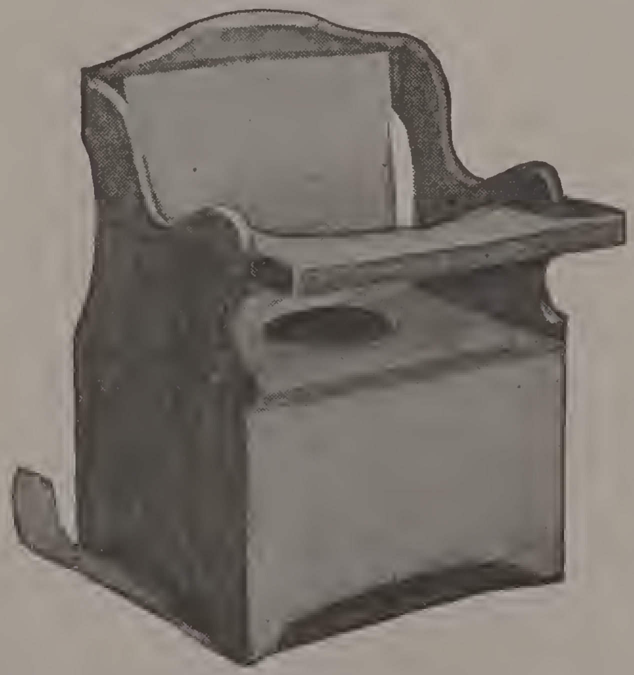
The preferred method of giving an enema to an infant, using a fountain syringe always in preference to a bulb syringe. A water-proof sheet and pad or towel may be placed over the lap, covered with a large diaper, the free end of which may be raised up and against the thighs of the infant when ready for the movement.

placed between the knees of the mother or nurse, with his back supported against her chest, or, later, may be placed upon a chamber chair such as is to be found in any large furniture or department store. In the latter case the front cross-board should be fastened securely, and perhaps a pillow placed at the back in the early months. At first it will be necessary to induce the movement by means of a small cone of oiled paper, a very small rectal injection, or even a glycerin suppository, the latter being suggested only because it is less objectionable than soap. After a time, when regularity is established, it will merely be necessary to place the child in the customary position. The attempt should be made following a full feeding each day at the same time.

Carrying the Baby.—Care should be observed in holding and carrying little ones to insure a position which will be comfortable and free from danger and injury to them. The illustrations on the next page show the right and wrong methods of carrying an infant.

Motherhood comes not easily to the women of the present generation. Several forces may be at fault, but there can be no doubt that training and civilization are to blame for much of this deplorable state of affairs. Girls are now taught to sing, to play, to dance, to klick the typewriter, to keep accounts, yes, even to cook and sew (thanks to an awakening interest in domestic economy), but how many are taught to feed and dress a baby, much less to hold it properly?

An infant, during its first few months, derives very little satisfaction (but what might be secured otherwise) from cuddling and loving contact, but its sensitive, pliant responsiveness to any and all sensations soon renders them necessary to its comfort, and bad habits are thus formed. It is merely an embryo



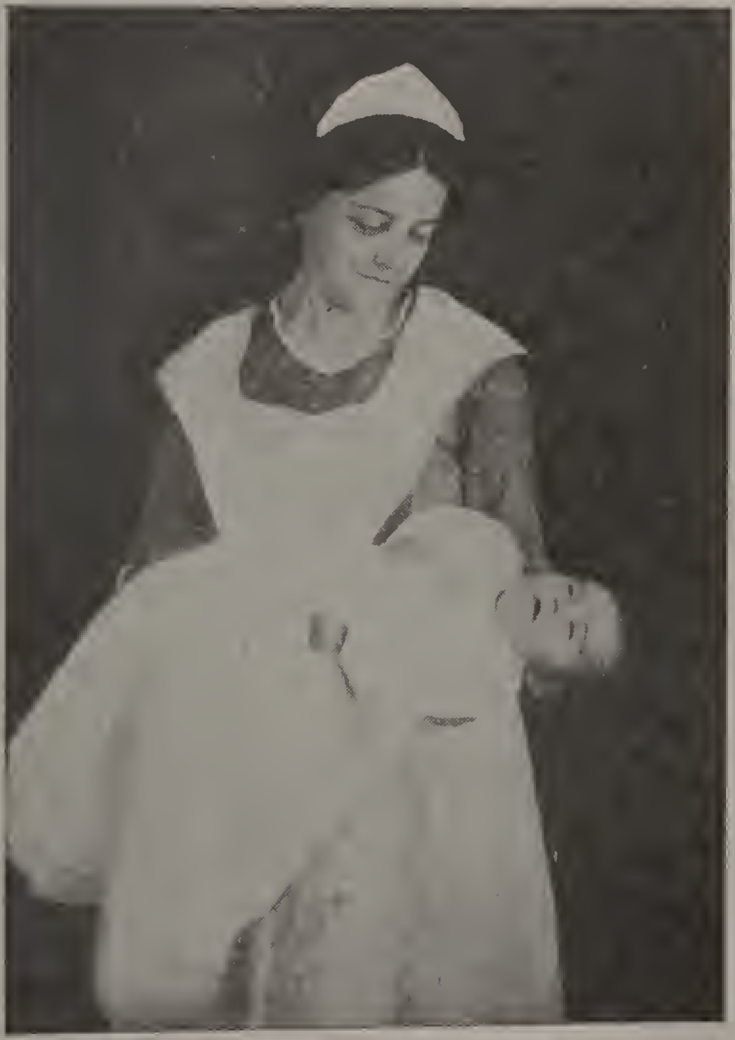
A convenient type of chamber chair which may be used in most cases as early as the age of four or five months.

at this stage and is governed by whatever influences are brought to bear upon it. If it's cuddling, it inclines to that form of satisfaction; if it's simply to lie quietly in its snug little crib, and just grow, then that's the line of least resistance for him—that's the direction his fancies will follow.

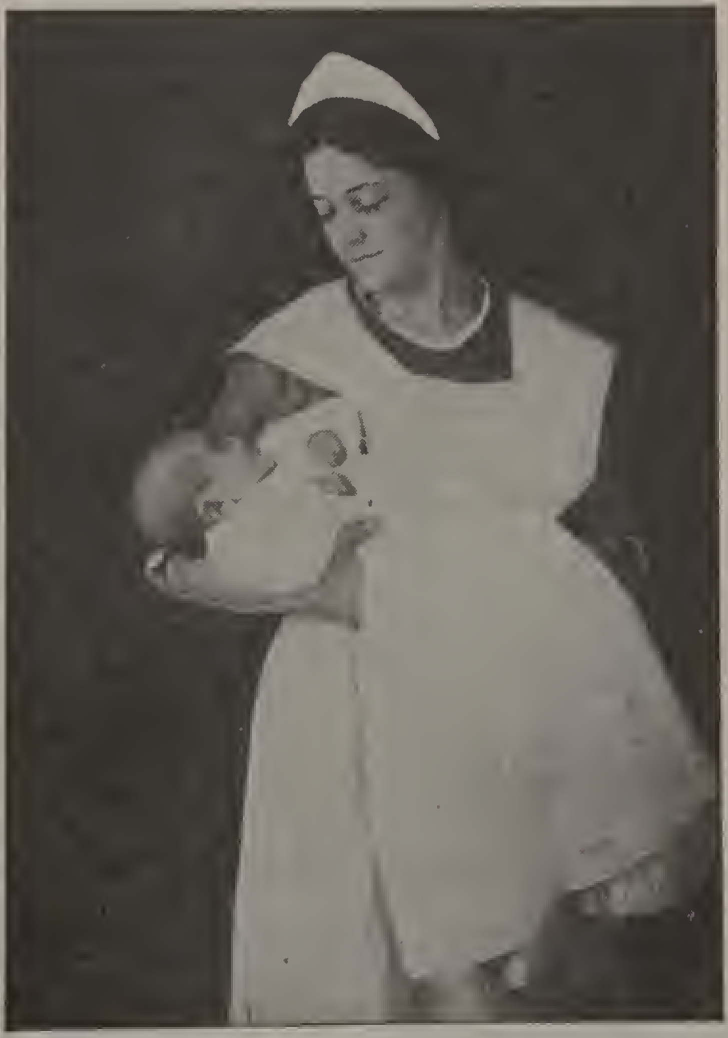
Let the child learn, and learn early, to amuse itself, to solve his own problems, to make little of the knocks and bumps which must come to his little body as well as to his heart and brain.

Clothing.—The new-born infant, having a limited capacity for generating heat, and a larger surface in comparison with the weight of the body than when it gets older and larger, requires sufficient clothing to keep it thoroughly warm during the early weeks of its life. After that it should be gradually accustomed to the air.

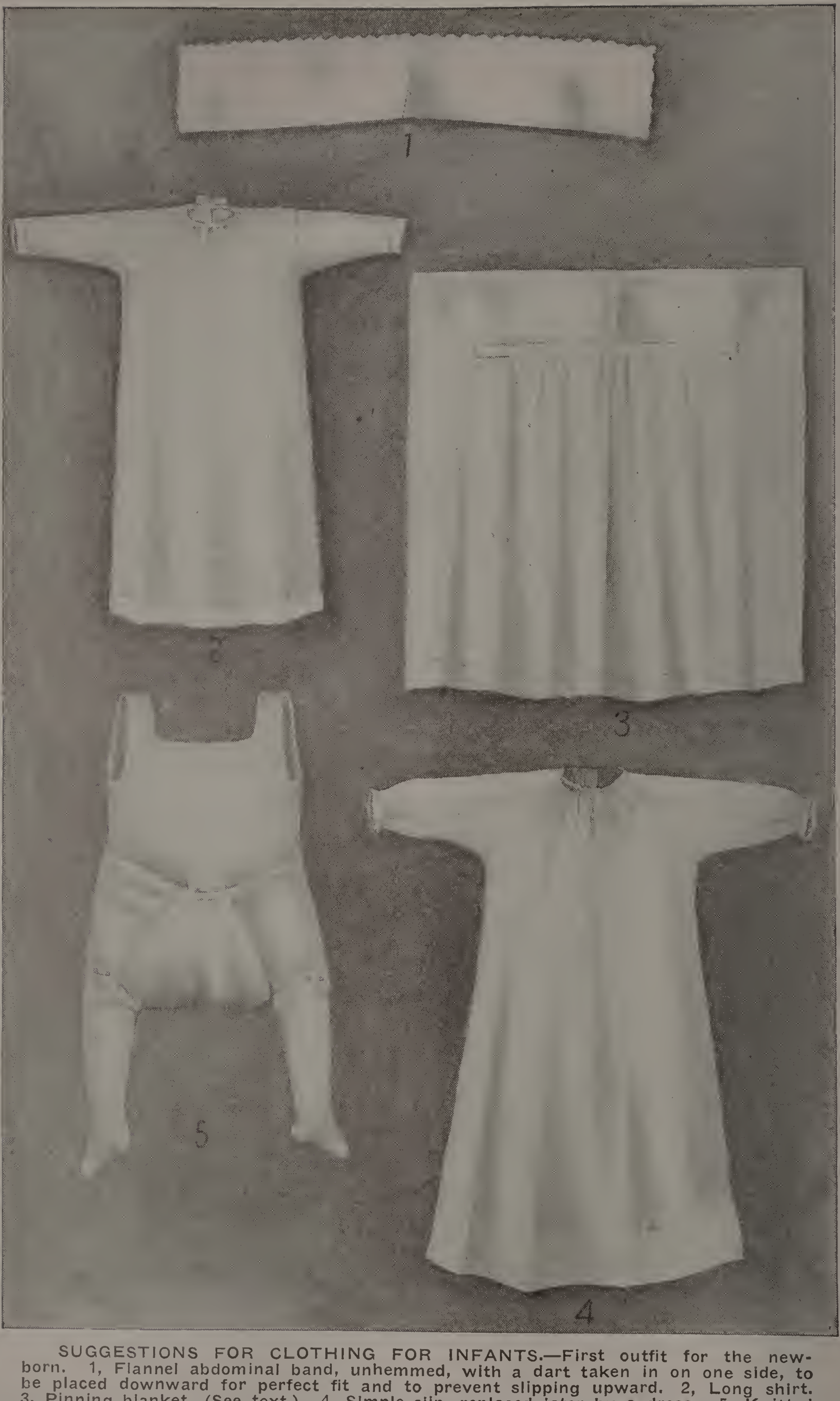
The clothing of the infant should be loose and light and as simple as possible. Loosely woven fabrics which provide



Incorrect method of carrying an infant, both arms underneath with the head hanging down unsupported. Such a position involves both strain and discomfort.



Proper way of holding a young infant; the head is supported by the forearm of the arm upon which the child is carried. The legs may be supported by the other hand.



SUGGESTIONS FOR CLOTHING FOR INFANTS.—First outfit for the newborn. 1, Flannel abdominal band, unhemmed, with a dart taken in on one side, to be placed downward for perfect fit and to prevent slipping upward. 2, Long shirt. 3, Pinning blanket. (See text.) 4, Simple slip, replaced later by a dress. 5, Knitted band, with pinning tabs, soon to replace the abdominal bands, with method of pinning diaper and stockings.

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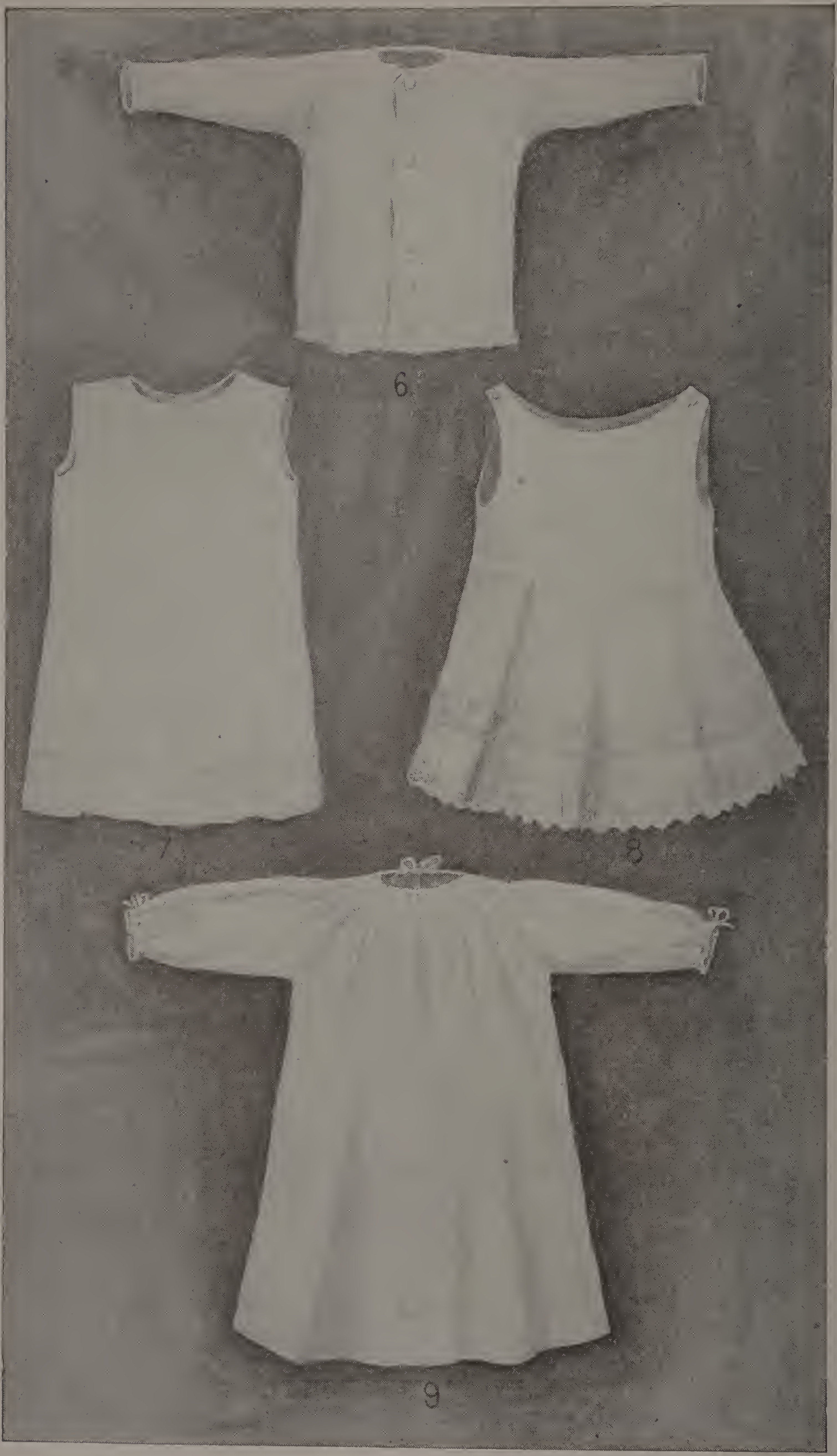
room for an inner layer of air are warmer than those of the same weight and substance tightly woven. Freedom of movement is important, and all binding or pressure upon any part cannot help but interfere with the circulation and otherwise produce bad results. All clothes should be changed, from the skin out each day. *They should not be starched.*

The necessary garments for the baby immediately after birth are as follows: Woolen abdominal bandages, shirts, diapers, pinning blankets and slips.

The abdominal bandage should be a strip of flannel perhaps five inches wide, and running twenty-seven inches or whatever the width of the goods may be. This will probably go around the body about twice, and should *not* be hemmed, for this will interfere with its fit and comfort. Notches like the teeth of a saw may be cut to prevent ravelling, with a slight gore (see illustration) in the middle of one side to make it conform better to the shape of the body, this gore placed downward in putting on the band. It should preferably be sewed or basted on, though tiny safety-pins may be used placed horizontally. It should only be snug, great care being taken to avoid constriction. If it seems to get tighter later in the day, it should be loosened. A band too tight may lead to rupture at the navel. Four or five of these flannel bands will be sufficient at the utmost.

A knitted band can be used after the first couple of weeks, or after the navel is healed and no longer requires that a dressing be held in place. The preferred style is one with shoulder straps to hold it in place above, and with a little tab or projection below which may be pinned to the diaper when the latter is fastened, and with the same safety pin. This band, which is half band and half shirt, should be warm, of soft wool or mixed wool and silk.

Shirts should be *loose,* and may be either of soft knitted wool or silk and wool in winter, or in summer of light silk and wool, silk and cotton, or cotton. In summer there are cool days as well as hot days, and it is well to have shirts to correspond to the changes in the weather.



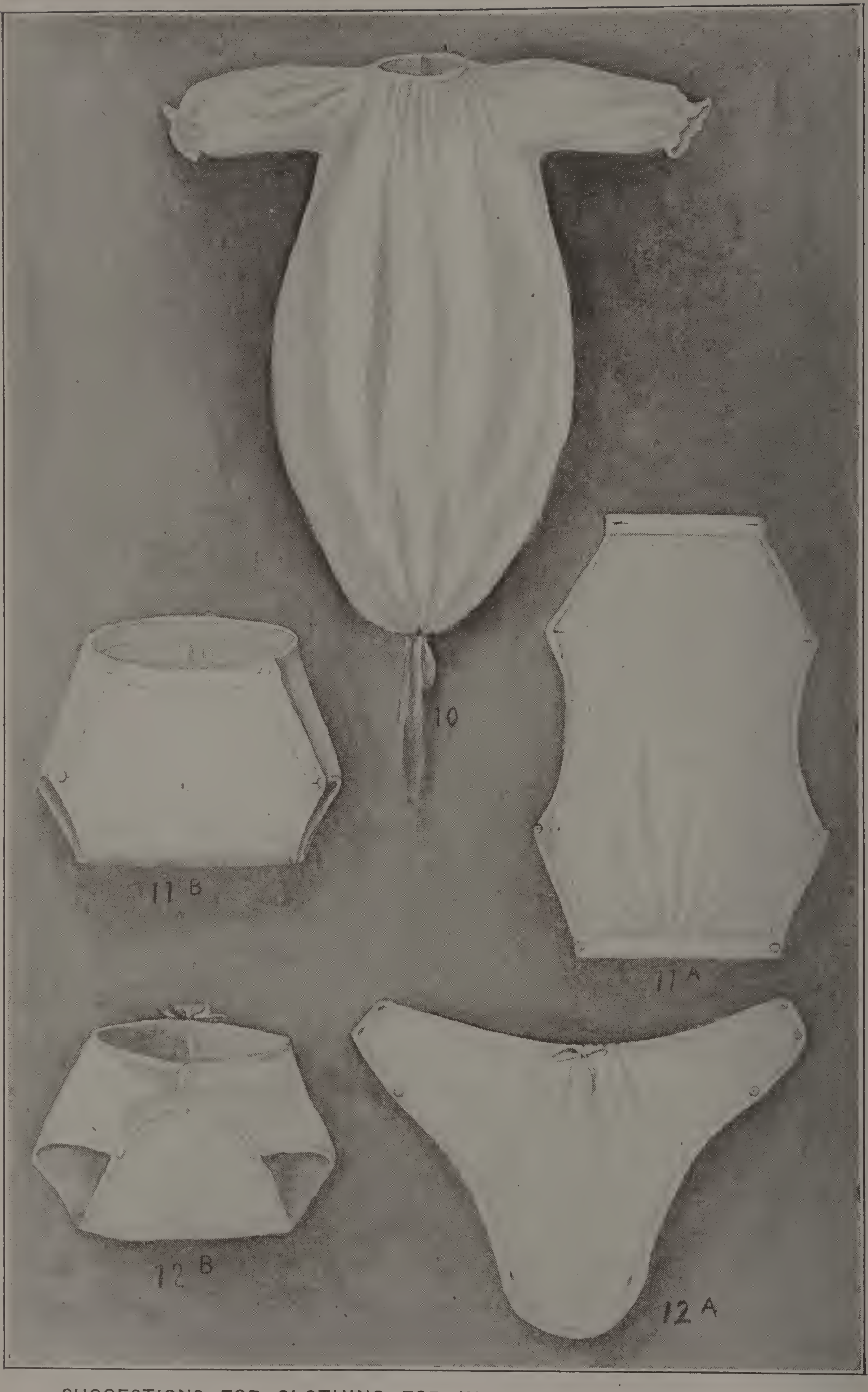
SUGGESTIONS FOR CLOTHING FOR INFANTS.—Outfit for infant in short clothes. 6, Shirt. 7, Woolen petticoat for winter, cut all in one piece, buttoned down the back. 8, White muslin petticoat, buttoned down back, also in shoulder straps, for easy removal. 9, Simple dress.

Woolen garments may be washed satisfactorily if only white soap is used in a light suds of medium warm water, and then rinsed in water of the same temperature. If it is feared that they will shrink too much, they should be dried stretched over an improvised frame. Special frames are manufactured for this purpose, but any clean boards or household objects of appropriate size will answer the purpose just as well, with no expense. Shirts should be loose and free around the armpits especially.

Diapers should be provided in a sufficient number to be able to use them clean and thoroughly dry at all times. Linen or cotton bird's eye, Daisy cloth, plain cotton flannel or any other suitable cloth may be used. The wet diapers should never be dried and used a second time without washing, for the salty deposits of the urine will prove irritating. The wet diapers should be scalded in hot water and very thoroughly rinsed in several waters. They should be dried in the sunshine, if possible. Soiled diapers should be well washed and boiled. They may be rinsed off in a toilet immediately, and afterward washed thoroughly. Soap powders, washing soda, ammonia and the like should be avoided, for they will prove extremely irritating to a delicate skin unless rinsed in many waters. It is a splendid labor-saving plan to place small squares of clean old linen rags inside the diapers when they are put on, or perhaps pieces of absorbent gauze, so that these small squares will hold all or most of the bowel movements, then to be burned. If there is irritation of the skin, the parts should be sponged off with clean water at each change, paying special attention to cleanliness of the genitals. If sore, olive oil will soothe and serve as a protection against wetting. See also suggestion for training of infants, under *Bowels.*

Petticoats and dresses may with great advantage be replaced by the pinning blankets and slips mentioned, during the first three or four months. Simplicity and convenience in clothing is demanded at this time, rather than fussiness, and the infant should be disturbed as little as possible by dressing.

The pinning blanket, or "barrow," is made out of a light



SUGGESTIONS FOR CLOTHING FOR INFANTS.—10, Nightgown for winter, made of outing flannel, buttoned down back, with shirr-string at the bottom to enclose the feet. 11-A, Pattern for waterproof diaper covering or protector, and, 11-B, method of wearing. 12-A, Another style of waterproof protector and, 12-B, method of buttoning and wearing. A baby's clothes should never button at the back as this causes pressure of buttons when lying down.

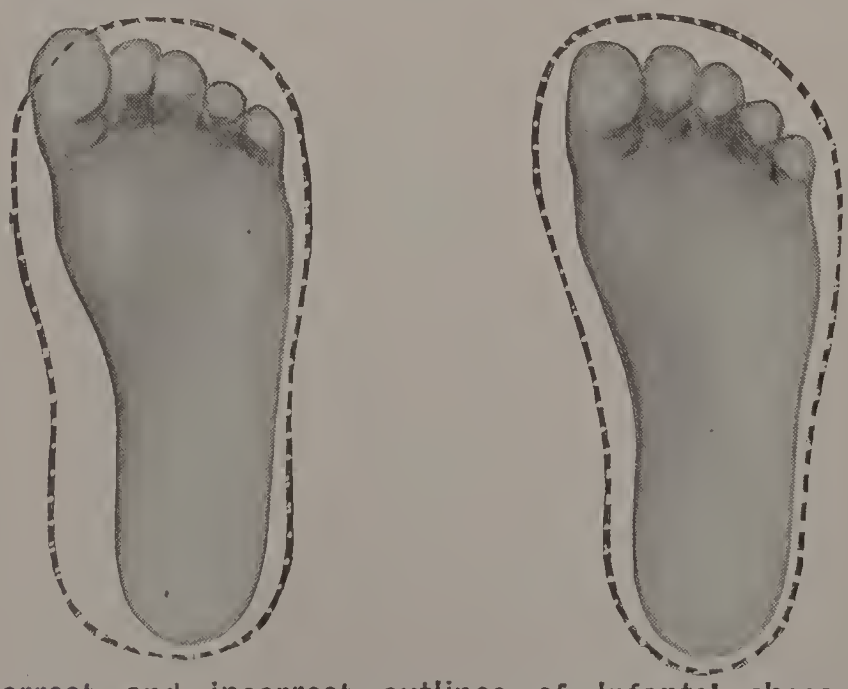
weight flannel, and cut in such a way that the band part comes around the body and laps over, conforming to the size and growth. It should be put on so that the opening lies in front, which is very convenient for changing the diaper. It should be made longer than the other clothes so that the bottom may be folded over and pinned, thus enclosing the legs and keeping them warm. The slips should be made without trimming and as simply as possible. It is less disturbing if they are put on over the feet.

At three or four months the pinning blankets and slips may be discarded entirely in favor of the regular petticoats and dresses. A length of twenty-seven inches is recommended, for the great length once in vogue for infants' clothing was only a bother and a waste. Economy, however, sometimes suggests a greater length for the petticoats, so that later, when the child is put in short clothes, each one may be cut in two, making two petticoats. Flannel petticoats for winter are best cut all in one piece, the flannel running up to the shoulders, and buttoned down the back, this style being much warmer than one made with a band.

From the time that short clothes are adopted, and this should be soon for the sake of freedom of movement, knitted "booties" may be worn until the child commences to stand or walk. It is better not to put on shoes before this time, for the little toes should have the utmost freedom. Socks may be worn from the beginning, if the baby is born in the winter, and should be white. They should be pulled up to the groin and pinned to the diaper. Shoes, when adopted, should be broad in the toes, even what seems unnecessarily broad. The straight soles are most unsatisfactory. (See illustration.) They should be made in rights and lefts, the same as for older children.

Waterproof diaper coverings are of great advantage. Rubber sheeting should not be used for this purpose, but there are other prepared sheetings of unobjectionable texture on the market. These waterproof "pants" or coverings may be purchased ready made, but it is much less expensive and often more satisfactory to make them at home to suit and fit each individual baby. (See illustration for suggestions of various patterns.)

These waterproof protectors have been more or less condemned by some doctors who have more to say than to do with the care of infants. It is said that they tempt one to permit the child to remain wet, but the crying of the child and the readiness to change it is not affected in the least by any such consideration. A child should always be changed as soon as it is known that it is wet. Certainly it is better to have one diaper wet, and to change it, than to find diaper, petticoat, dress, blanket and mattress all in a soaking condition, through the lack of such a protector, and to be compelled to wash all of these or have them in an unwholesome condition. Or, if the child is playing on the floor, it is much less likely to be chilled with a waterproof covering on than if all of its clothes are wet through and exposed to the currents of air. The effect of the wet diaper in irritating the skin is just the same without the covering as with it. To insure against prevention of a proper circulation of air it must not fit tight and it is essential that both sides be kept well open. On the whole the practical mother will not be willing to do without this convenience, once she has used it.



Correct and incorrect outlines of infants' shoes. The figure to the left shows a type of shoe, quite common, in which both shoes are the same, and which as dotted outline indicates, does not conform to the shape of the foot. The figure to the right shows the proper outline, with distinct right and left shoe for right and left foot.

Nightgowns should be without lace, as simple as possible and fairly long. In the winter they may have a shirr-string around the bottom to enclose the feet completely for warmth, and if the child throws its arms out on bitterly cold nights, small shirrstrings may be placed in the cuffs of long sleeves to close them also. In such a case, furthermore, it will be well to put on a warm knitted jacket to protect the shoulders, chest and arms. If it is difficult to keep the child covered, the coverings should be tied.

Creeping and playing on the floor, in the later months of infancy, demands clothing of a type very different from the pretty white dresses which mothers usually love. It is right that the baby should creep and roll on the floor, and the clothing should be accommodated to his needs. Rompers and creeping aprons, or at least colored dresses should be adopted for everyday wear. In cold weather a dark colored outing flannel may be used for the purpose. As the child grows older and plays outdoors in the sand, overalls may be used as well as rompers, for both boys and girls. They should be dressed in such a way that their freedom of action and play will not be restricted.

CONSTIPATION.—See *Bowels.*

DEVELOPMENT OF INFANTS.—Although all children do not develop at the same rate, the following details of the appearance and conduct of infants at various stages of development are considered by standard medical works as a safe standard of the development of children. No concern should be felt through failure of a child to exhibit any of the characteristics here described at a certain time unless several months elapse without any sign of the little one developing the faculties normally possessed by a child of its age. Should such a condition occur, general health-building measures should be at once inaugurated, and proper authorities consulted as to the cause of the retarded development of the youngster.

The normal infant should hold up its head at the age of three months.

The baby should be able to sit up alone at six months of age.

First Month.—Sensitive to light as early as first and second days. Pleasure in artificial light and in bright objects on eleventh day. Hears on fourth day. Discriminates sounds last two weeks of month. Starts at gentle touches second and third days. Sensibility to taste about end of first week. Strong-smelling substances produce mimetic movements at birth. Pleasure first days in nursing, in bath, in sight of objects. Discomfort first days from cold, wet, hunger, tight clothing. Smiles on twenty-sixth day. Tears on twenty-third day. Vowel-sounds in first month. Memory first active as to taste and smell; then as to touch, sight, hearing. Incoordinate movements of eyes. Sleeps two hours at a time, and twenty hours in twenty-four.

Second Month.—Strabismus occasionally until end of month. Recognizes human voices; turns head toward sounds. Pleased with music and with human face. Sleeps three, sometimes five or six hours. Laughs from tickling at eighth week. Clasps with its four fingers at eighth week. First consonants from forty-third to fifty-first day (am-ma, ta-hu, go, ara).

Third Month.—Sixty-first day, cry of joy at sight of mother and father; eyelids not completely raised when child looks up. Accommodates at ninth week. Notes sound of watch at ninth week; listens with attention.

Fourth Month.—Eye-movements perfect. Objects seized are moved toward the eyes. Grasps at objects too distant. Joy at seeing self in mirror. Contraposition of thumb in grasping at fourteenth week. Head

The healthy baby usually begins to creep at eight or nine months.

If properly developed, a baby will stand alone and walk at one year.

held up permanently. Sits up with back supported at fourteenth week. Beginning to imitate.

Fifth Month.—Discriminates strangers. Looks inquiringly, pleasure in crumpling and tearing newspapers, pulling hair, ringing a bell. Sleeps ten to eleven hours, without food. Desire shown by stretching out arms. Seizes and carries objects to mouth. Consonants l and k.

Sixth Month.—Raises self to sitting posture. Laughs, and raises and drops arms when pleasure is great. "Crows" with pleasure. Compares image of father in mirror with original.

Seventh Month.—Astonishment shown by open mouth and eyes. Recognizes nurse after four weeks' absence. Sighs. Imitates movements of head, of pursing lips. Averts head as a sign of refusal. Places himself upright on lap.

Eighth Month.—Astonishment at sounds and sights: at imitations of cries of animals.

Ninth Month.—Stands on feet without support. More interest shown in things in general. Strikes hands together with joy. Shuts eyes and turns head away when something disagreeable is to be endured. Fear of dog. Turns over when laid face downward. Turns head to light when asked

An athletic and normally developed boy of fifteen years.

where it is. Questions understood before child can speak. Voice more modulated.

Tenth Month.—Sits up without support in bath and carriage. First attempts at walking at forty-first week. Beckoning imitated. Missed parents in absence, also a single ninepin of a set. Cannot repeat a syllable heard. Monologues and hints at imitation (ma, pappa, tatta, appapa, baba, tata, pa, rrrr, rrra).

Eleventh Month.—Screaming quieted by "sh." Sitting becomes habit. Stands without support. Stamps. Syllable correctly repeated. Whispering begins. Consonants b, p, t, d, m, n, r, l, g, k, vowel a most used, u and o rare, i very rare.

Twelfth Month.—Pushes chair. Can not raise self or walk without help. Obeys command. Gives the hand.

Thirteenth Month.—Creeps. Shakes head in denial. Says papa and mamma. Understands some words spoken.

Fourteenth Month.—Can not walk without support. Raises himself by chair. Imitates coughing and swinging of arms.

Fifteenth Month.—Walks without support. Laughs, smiles, gives a kiss on request. Repeats syllables. Understands ten words.

Sixteenth Month.—Runs alone. Falls rarely.

Seventeenth, Eighteenth and Nineteenth Months.—Sleeps ten hours at a time. Associates words with objects and movements. Blows horn, strikes with hand or foot, gives leaves to stag, waters flowers, puts sticks of wood in stove, washes hands, combs and brushes hair, and other imitative movements.

A remarkably muscular youngster of ten years of age, weighing 68 pounds.

Twentieth to Twenty-fourth Months—Marks with pencils on paper, whispers in reading newspapers. Very few expressions of his are recognizable. Executes orders with surprising accuracy. Tries to sing and beat time and dance.

Twenty-fifth to Thirtieth Month.—Distinguishes colors correctly. Sentences of several words. Begins to climb and jump and to ask questions.

Thirtieth to Fortieth Month.—Goes upstairs without help. Sentences correctly applied. Clauses formed. Words distinctly spoken, but influence of dialect appears. Questioning repeated to weariness. Approximates manner of speech to that of family more and more.

A vigorous example of young boyhood.

Diarrhœa.—See *Bowels.*

Diet of Children.—See *Older Children,* under *Feeding.*

Diseases and Disorders of Infancy.—A vigorous normal infant, properly cared for, will usually escape sickness of any kind, being apparently immune even to some disorders which are regarded as contagious, because of its powers of resistance. Signs of illness, however, should be promptly attended to. If the mother does not know the nature of the trouble, then at least she can be sure that either there is some digestive disturbance or that the young organism is attempting to eliminate foreign matter or poisons. In either case,

Fifty pounds of almost perpetual motion, showing childhood, slenderness, but wiry and full of dynamic energy.

feeding should be stopped immediately, plenty of warm water being given instead, previously boiled and given warm in nursing bottles. If fever is present, it may be given moderately cool, but not cold. The bowels should be looked after, and an enema will be of great value, especially if there is constipation. The feet should be kept warm, and usually warm abdominal packs will be of advantage. Plenty of fresh air is of vital importance.

The general suggestions given in Volume IV under the head of *Children, Diseases of,* should be carefully read. Most important childhood diseases, such as Measles, Scarlet Fever, Whooping Cough, Thrush, Rickets, etc., are taken up separately and in detail in Volume IV. Constipation and Diarrhœa are referred to there, as well as under the head of *Bowels,* in this chapter. See also *Temperature,* this chapter.

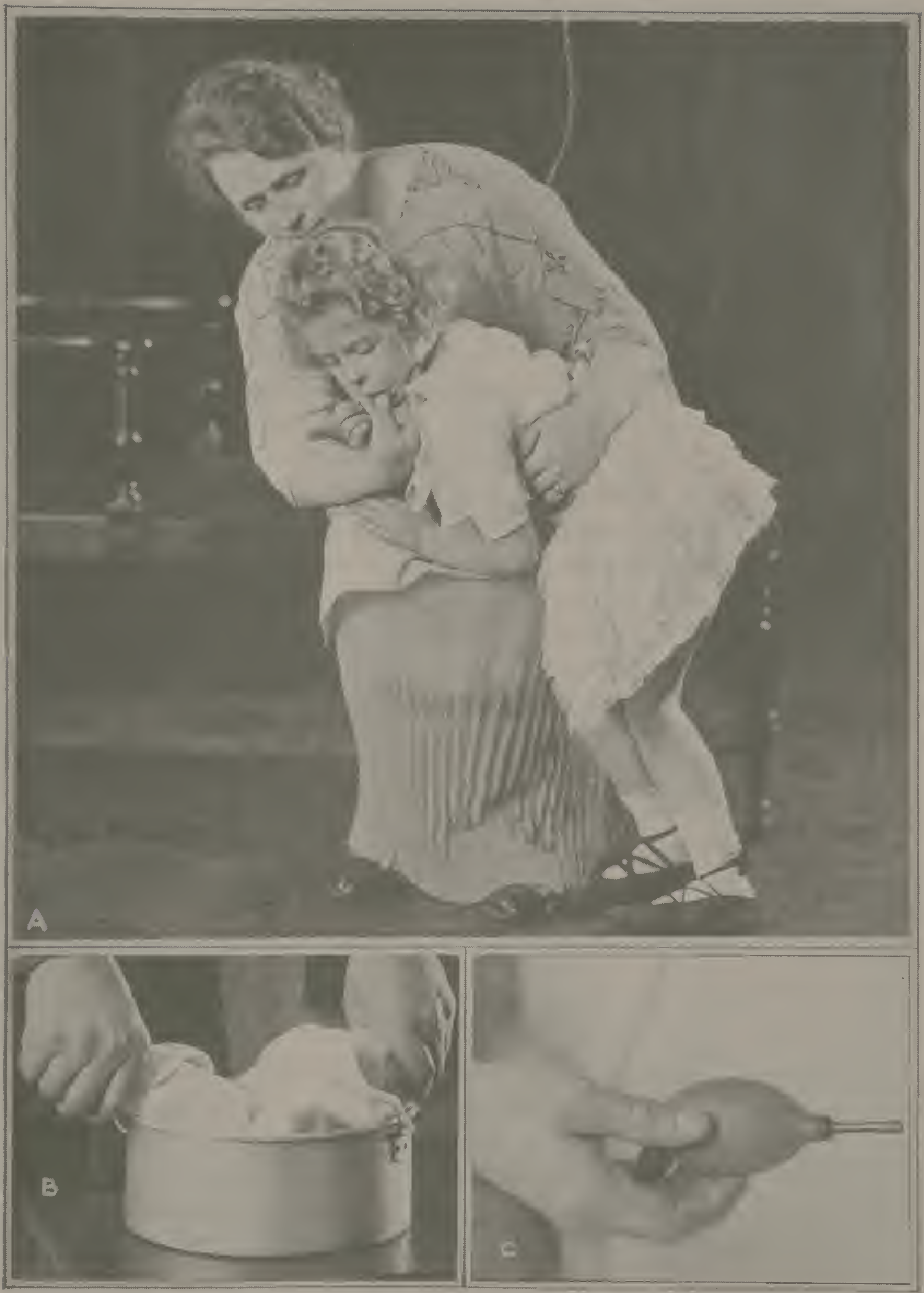
Colic is not an uncommon complaint among young infants, especially when improperly fed or exposed in such a way that abdomen and lower extremities become chilled. Placing the feet in warm water (100 to 108 degrees Fahr.) will usually stop it, but in a stubborn case a small hot water bag at the stomach, with another at the feet, or perhaps a warm enema, from a fountain syringe only, at 105 to 110 degrees, may be necessary.

For *Convulsions,* see *Eclampsia,* in Volume IV.

EARS, CARE OF.—In the care of the ears it is unwise to insert hairpins, toothpicks, matches or other hard objects, even though covered with cloth or cotton. It is well always to dry the ears thoroughly after the bath, but for this purpose one should use absorbent cotton, a wad of which may be twisted into the shape of a small finger or cone, which will be sufficiently stiff for insertion and yet soft enough to avoid doing any injury. In case of earache or running of the ears, put in a few drops of warm olive oil, plug with cotton, and then apply warmth with a hot water bag or other warm object.

EXERCISE.—See *Training and Education of Children.*

EYES, CARE OF.—Of special importance is the care of the eyes in early infancy, and they should be washed every day



To cleanse the child's stomach, a most effective position is that shown in Photo A, with the knee or your hand placed to assist free vomiting. Photo B shows how a hot pack is prepared by holding the ends of a bath towel while it is immersed in boiling water. Photo C illustrates a syringe that is a valuable adjunct in acute attacks in children.

with boric acid solution, one teaspoonful to a glass of boiling water, tepid when used. The washing of the eyes the first few days should be very thorough, for infection at birth may lead to complete loss of sight if neglected. The greatest percentage of blindness arises in this way.

A sponge should never be used, but rather pieces of absorbent cotton, each one thrown away after using, and never using the same one on both eyes. The lids should be held apart gently with the fingers, and by squeezing the cotton above the eye, a tiny stream should be allowed to run over the open eye, from the outside toward the inside corner, but not across the bridge of the nose and into the other eye. In other words, if one eye is infected, the infection should not be carried to the other. This should be repeated several times at first, or whenever there seems to be any pus or inflammation.

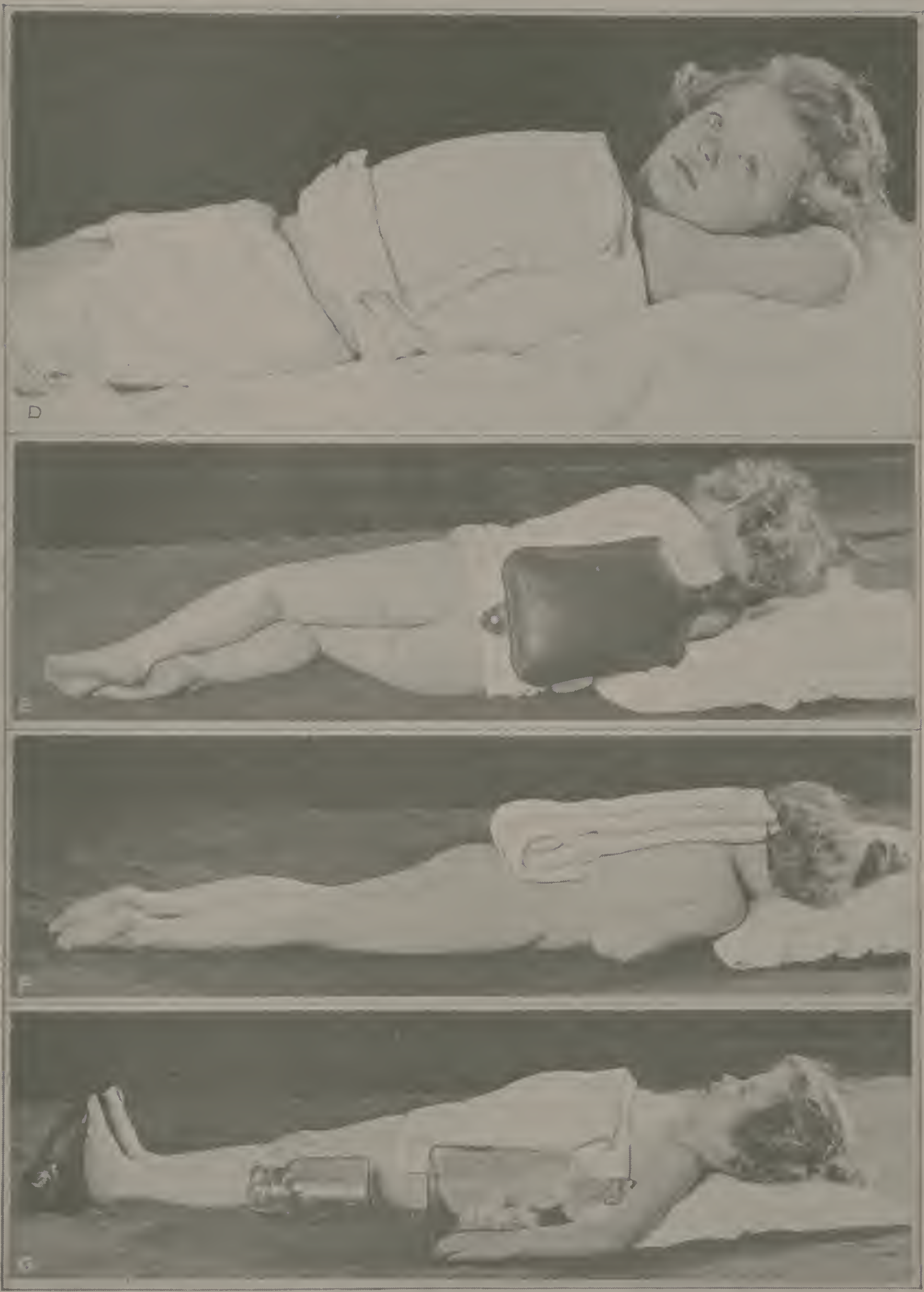
The eyes are very delicate and sensitive at first, and therefore should not be exposed to any glaring light for some time. Exposure to the direct rays of the sun should be avoided, even when shut, for the lids are almost transparent, and artificial lights in the house would better be shaded, especially electric and gas lights.

Feeding and Nursing.—The perfect food for the human infant is that intended by Nature for its sustenance during the first year or longer. Failing in the supply of mother's milk, substitutes may be used, and in some cases with very satisfactory success, but they are never so perfect or so much to be depended upon as the milk of a normal and healthy mother. That supplied by the maternal organism is exactly suited in its constituents, and proportions to the precise needs of the human baby.

The Milk Diet for Nursing Mothers.—Many mothers have found that the exclusive milk diet produces an excellent means of stimulating the secretion of milk for nursing infants. Care should be taken in undertaking the use of this diet to insure that it agrees with the mother perfectly. Even when the use of the exclusive milk diet is impracticable, a fair amount of milk can be consumed daily to advantage.

The nursing of a baby would seem to be the very simplest of all things, and yet there are common mistakes which are so detrimental to the welfare of the child that it is well to emphasize a few important rules in regard to infant feeding. Two of the most important mistakes are those of overfeeding and irregularity. Most babies are very much overfed, and there is no doubt that much of the prevalent illness among infants is due to this fact. Irregularity also is a cause of digestive disturbance and general functional derangement. It has generally been the habit of uninformed mothers to nurse their babies at any and every time of day and night, at the least signs of discomfort upon the part of the little ones, thereby keeping them in such a state of uneasiness that they are likely to cry both day and night. Every time the baby opens his mouth to cry, the old-fashioned mother fills it and quiets it with the generous supply from the maternal glands, the very expression of her love thus acting against the welfare of her dearest one.

Regularity in feeding is a very important matter in infancy, allowing each meal to be digested before partaking of another, and establishing the habit of being hungry and having the hunger satisfied at the same hours each day. It is a common thing for mothers to fear that baby is not getting enough nourishment, but in many more cases they should fear the excess of feeding that is inclined to bring on disease. All books on the care of children have formulas or tables of the number of feedings for babies of different ages, but if anything one should discount them somewhat to get the very best results. That is to say, one or two less feedings per day, at longer intervals, than is suggested in the table for a particular age, will sometimes prove more satisfactory. But in all cases the parent should map out a special time table suited to her own baby, and adhere to this strictly in order that the regularity may not be interfered with. We sometimes read pretty expressions of sentiment regarding the "old-fashioned mother" who fed her baby whenever she thought of it or felt like it, but this sentiment takes no stock of the deplorably high infant mortality



The first photo (D) illustrates application of wet abdominal pack. Second (E) shows use of hot water bag as auxiliary to hot abdominal or spinal pack. Third photo (C) shows method of applying ordinary spinal pack. Fourth (G) illustrates emergency use of various types of hot water containers, covered by cloth to avoid burning the child.

rate of the past. Not only is regularity favorable to the digestion of the infant, but also to the secretion of milk in normal and satisfactory quantities. With regular feeding, also, the child is trained not to cry for the breast at other times.

The practice of night feeding is one that may with great advantage be done away with in most instances. It may be desirable to give one night feeding the first few weeks, but after the first month, or as soon as possible, the child should be trained to pass the entire night without nursing, have its last meal perhaps ten o'clock in the evening, and that meal a satisfying one. The child will soon learn not to cry for the breast at night, and the fast of several hours during the night, say, from 10 P. M. until 7 A. M., will be of great value in resting and strengthening the young digestive apparatus. The baby that goes without the night feeding is much less likely to develop colic or any other disorder. Furthermore, if the mother can sleep through the entire night without having her rest broken, the gain in her vitality will be such as to provide a better quality of milk during her waking hours, and thus further promote the welfare of the child.

The stomach of the new born infant is small, being perpendicular and looking somewhat like a part of the intestines which has been dilated. It has a capacity of only about two or three tablespoonfuls at first, so that during the first week it is well to give the feedings at intervals of two hours, and giving nine or ten feedings per day. With the second week the intervals should be two and a half hours, with seven or eight feedings per day, and after three months intervals of three hours should be observed with not more than six feedings per day. At seven or eight months intervals of three and a half hours should be allowed, with perhaps five daily feedings.

There will naturally be variations in the time and number of feedings in different cases, according to individual requirements and peculiarities, so that the following time-table must not be regarded as an ironclad rule to be followed. It is merely offered as a suggestion, for babies of normal weight and development. Those that are backward in growth or below normal weight should be fed *according to weight* rather than according to age, or in other words, according to the age of a normal child of the same weight.

NURSING TIME-TABLE

First Week.		Second Week to Three Months.		Three Months to Seven Months.		Eight Months.	
A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
3:00 (Night)							
6:30	1:00	7:00	2:30	7:00	1:00	7:00	2:00
(Bath	3:00	(Bath	5:00	(Bath	4:00	(Bath	5:30
at 8:30)	5:00	at 9:00)	7:30	at 9:30)	7:00	at 10:00)	9:00
9:00	7:00	9:30	10:00	10:00	10:00	10:30	
11:00	9:00	12:00					
	11:00						

Remember that it is the baby with the keen appetite, and the ability to assimilate every drop of food that it takes, that will thrive the best. It is especially important that the baby should be hungry for that last feeding in the evening so that it will be satisfied for the night. And so that it will sleep soundly through the night, it should not be encouraged to sleep all the early evening. Plenty of sleep is necessary, but there is plenty of time for this through the day and during the long stretch of the night after the last feed. If it can be kept awake during the evening, and perhaps given some of its exercise at that time, it will be ready at the proper time to sleep and let sleep.

The first feeding should be given some time during the first day, perhaps after its first sleep or after the first bath. This is not really a feeding, for the secretion of the breasts in the beginning is a laxative fluid called *colostrum,* which is valuable for purging and cleansing the alimentary canal of the infant. The supply of real milk comes the third day. A little warm distilled or boiled water may be given if desired the first couple of days, but no other fluids, and certainly no "teas" or concoctions of any kind. It may be necessary to use some patience in the beginning to train the child to take the breast, and it should always be comfortably supported when nursing. Whether lying down or sitting up the mother should hold the child up to the nipple in a semi-upright position.

It is also best to give each breast alternately, rather than some of each breast at each nursing, for the reason that the supply should be well trained in order to maintain the activity of the glands. Furthermore, the proportion of fat is greater toward the end of each feeding, and if only a part of the milk from each breast is used, the child will not secure a properly balanced proportion of nutritious elements.

The length of time consumed in each feeding may be from ten to twenty minutes, but never longer than the latter period. If the child desires to nurse longer than this, and cries or frets upon leaving the breast, then there is reason to believe that the supply of milk is insufficient. If attention to the health of the mother, and to her diet, does not soon remedy this condition, it will be wise to place the child either partly or entirely upon the bottle. In some cases a combination of nursing and bottle feeding will serve satisfactorily.

The question as to whether or not the child should be awakened for the sake of feeding, if it is asleep at the scheduled hour, is one that invariably arises. One is naturally disinclined to arouse a baby from its sleep, but if punctual adherence to the regular hours of feeding and bathing is observed, the little one can be trained to be awake at the right time and to sleep in the intervening periods. It will not be necessary to wake it up more than a few times, as a rule, and it is worth the trouble to establish the habit.

The condition of the mother is a most important factor in determining both the quantity and the character of the milk. She should do everything possible to maintain the highest degree of vitality and health, getting as much outdoor air as possible, and observing a wholesome and nutritious diet. The quantity of milk can be influenced somewhat by regulating the amount of liquid food consumed, increasing or decreasing as desired. The fat in the milk is readily influenced by the diet of the mother. To increase the albumen one should take a great deal of exercise, particularly out-of-doors. No other special suggestions are necessary here, beyond emphasizing the value of health and pure blood. The subject of diet as presented in a previous volume of this work should be carefully studied, remembering that whatever is most conducive to the vitality and welfare of the mother will best provide for a satisfactory secretion of milk. Those things which have a particularly strong odor or taste should be avoided, including condiments, mustard, horseradish and the like, while everything in the nature of alcoholic beverages, tonics containing alcohol, or drugs of any kind whatever should be religiously eschewed. All these poisons may be taken by the child through its mother's milk, and they are particularly injurious to the tender young tissues. Anger, grief and excitement impair the quality of the milk, and the baby should not be nursed when the mother is mentally upset.

A wet-nurse is to be preferred to artificial feeding when the mother's milk fails, providing a satisfactory wet-nurse can be secured. She should be thoroughly healthy and preferably not over thirty years of age, and it is important that the period of lactation in her case should conform more or less to the age of the child. A wet-nurse of several months' lactation would not suit perfectly the requirements of a new-born baby. She should have no chronic or constitutional disease, and should be of a steady, quiet temperament. An excitable or nervous wet-nurse is undesirable. On the whole, the same general requirements of health which apply in the case of the mother will also apply to the wet-nurse. She must be scrupulously clean.

The nipples must be well cared for, for the sake of both the mother and the child. They should be thoroughly cleansed both before and after nursing, boracic acid being a good cleansing agent. If there is a scaly coating, olive oil should be applied, to be washed off before the next nursing. Nursing by a very strong baby sometimes causes great tenderness, and this should be counteracted by an attempt at hardening the nipples.

It is sometimes well in the case of the first baby, to commence treatment for this purpose before the birth of the child. An equal mixture of water and alcohol is often recommended for this purpose, while glycerin is considered to be both healing and hardening. In using these preparations special care should be used in washing the nipples before nursing. When there are fissures or cracks which make nursing very painful, a nipple shield may be used until they heal. The baby may object, but if he is hungry as he should be he will take the artificial nipple. The nipple shield should be thoroughly cleaned before and after nursing. Where the nipple is depressed or flat, attention should be given to it each day during the period of pregnancy, pulling it out with the fingers to its proper condition. If still it does not stand out in such a way that the infant can take hold of it, then just before the nursing it may be pulled out by the suction of a warm bottle, the neck of which is placed over it. Any clean bottle will do, the neck of which fits over the nipple. It may be heated moderately by dipping in hot water, the neck placed snugly over the nipple, and as the bottle cools the partial vacuum thus created will draw the nipple out and into the neck. Removing the bottle, the baby will have no further difficulty in taking hold and drawing the nipple out still more perfectly. Treatment of this kind will usually remedy the defect in a short time.

The weaning of the baby will depend entirely upon the mother and the continuance of a sufficient milk supply. In many cases nursing may be continued for the entire first year, and there are some women who can satisfactorily nurse their children much longer than that. Among the Guiana Indians of South America, it is a not uncommon practice of the women to wean their children at the age of three or four years. It very often happens that the supply of mother's milk commences to fail when the child is nine months old, while its needs are constantly increasing, and sometimes the supply fails much earlier than this.

Weaning should take place at any time when it is found that the child is not satisfied with the breast or when it ceases to gain as well as before. There is no doubt, also, that nursing a child under these conditions becomes a drain upon the mother. As a rule the baby will be ready for weaning at the age of ten or twelve months, unless the condition of the mother makes it necessary before this. Another guiding rule is that the child may be weaned when it has from eight to twelve teeth, though when dentition is much delayed this rule cannot be followed. Restlessness upon the part of the child, peevishness, irregularity of the bowels, inability to sleep, lack of energy in creeping or playing, loss of color, or of weight, are all signs indicating the need for a change. Likewise, pregnancy, inflamed breasts, nervousness or illness upon the part of the mother, will all demand immediate weaning.

Under ordinary conditions it is perhaps best to wean the child gradually, the first day giving one artificial feeding, and then gradually increasing the amount or number of bottle feedings until the breast is discontinued entirely. An indisposition to take the strange nipple will be readily overcome by waiting for the impulse of sufficient hunger. The food given, when weaning, should correspond to that suggested in the following pages for an infant of the same age brought up on the bottle. At ten or twelve months nearly every child will be able to take pure cow's milk of average richness.

Bottle Feeding.—Although human milk and cow's milk contain the same chemical and nutritive properties, yet the proportion is different, and the latter is therefore not nearly so satisfactory for the human infant as the former. And yet, when the former fails, very satisfactory results can invariably be secured with the use of cow's milk by modifying it somewhat so as to make it resemble the human milk as much as possible. It is quite important, however, especially in the case of a weak baby, that it should have mother's milk for the first three months at least, and in the event of the death or illness of the mother, a wet-nurse would be recommended for at least a time. But if the baby is strong and vital, it will thrive on modified cow's milk if it is properly taken care of and is not over-fed.

In a general way, the comments that have been made on overfeeding and irregularity in the case of nursing will apply to bottle fed babies as well. Nearly all are stuffed too much. The rules in regard to avoiding night-feedings, regularity during the day, the number of feedings and other matters discussed in connection with the use of mother's milk will apply here.

There are a number of prepared artificial foods which are commonly used for bottle feeding, all of them based upon a combination of malted grains and sugar with cow's milk, and in some cases they seem to prove very satisfactory. It is generally agreed among students and authorities, however, that fresh cow's milk, modified if necessary, is far more satisfactory in most cases. Sometimes these foods have the result of producing fat babies, but this is not always an indication of vitality or of a healthy, well-nourished condition. But there are some cases in which these preparations may be found more suitable. If driven to resort to them, only experiment will determine which one the baby will take and find itself in agreement with.

Goat's milk and mare's milk might be used for infant feeding but they cannot be secured conveniently and in satisfactory quantities, like cow's milk. The latter contains a higher percentage of solids than human milk, and particularly a higher percentage of proteids, and it is on this account that it is desirable to reduce it with water so as to make it possible for the delicate stomach of the new born baby to digest it. Mother's milk, again, is considerably sweeter than cow's milk, and it is for this reason that a little sweetening is added to the modified cow's milk in order to make it more nearly equivalent to the human milk. Milk sugar is always used for this purpose. Cane sugar should not be used since it is likely to ferment and cause trouble. The following table shows the proportion of ingredient's in human milk and cow's milk, in every thousand parts:

	Fat.	Proteids.	Sugar.	Mineral Salts.
Human Milk	38	17	60	2
Cow's Milk	31	36	45	7

Other analyses may differ slightly from this proportion, but this will suffice for a general comparison. The proportion of proteids, it will be noted, is in cow's milk a little more than double that in human milk. Now, while the digestive system of the baby will digest the fat very readily, the proteid is likely to give it trouble. It is particularly for this reason that the cow's milk should be diluted with water in the early months, and in order to bring up the percentage of fat to something more nearly like that of human milk one may use, instead of the whole cow's milk, a larger proportion of the cream. It is usually found that the baby can digest diluted cream from the very first day, and if the child is feeble and cannot be nursed, the food should consist in the beginning of a large proportion of cream, well diluted, with milk sugar and a little lime-water. As it gradually grows older and digestive powers grow stronger, the proportion of milk should be increased. The addition of lime-water is intended to counteract the acid character of the cow's milk, for it is sometimes acid, and the infant requires an alkaline food. Human milk is alkaline.

Cream, or milk rich in cream, may be obtained by skimming milk contained in a flat basin, or by dipping with a special cream dipper from the top of a regular milk bottle. For practical purposes, however, it is just as well to pour out of the milk bottle in which the cream has settled at the top. The very first poured off will be largely cream, and as more is poured a greater percentage of milk is secured. We would suggest for the practical mother, therefore, that a very satisfactory plan is to begin by pouring off a very little from the top of the bottle, and later gradually pour off a large amount as the needs of the child increase and it is ready for a larger proportion of milk in its foods. Or a good practical plan would be, for the first three or four months, to pour off the upper one-third of a bottle of milk of good average quality, or the upper half of a bottle of very rich Jersey milk. After three months one may gradually pour out a larger amount, thereby increasing the proportion of milk and of proteids in the food.

Some variations may be needed in different cases, and with some children it may be advisable to use less cream, though in such cases it will be necessary to have the milk diluted with the same amount of water. In a general way, however, the following table may be suggested, and will be found satisfactory in most cases. The top-milk is that poured from the top of the bottle, as suggested, and fairly rich in cream. In measuring milk sugar, note that one ounce equals five heaping teaspoonfuls. After boiling the water and cooling it, add the milk sugar and lime-water, and finally the milk, bottling in the nursing bottles, thoroughly cleaned, and cork with tight wads of antiseptic cotton. Keep on ice until used, and heat to 98 to 100 degrees Fahr. (not too hot) before giving to the baby. Bottles and nipples should be cleaned by boiling each day in soda water, and carefully rinsed.

TABLE FOR BOTTLE FEEDING OF AVERAGE INFANT.

Age.	Top-Milk.	Milk-Sugar.	Lime-Water.	Boiled Water.	Amount of Each Feeding.
Up to 1 Month	5 Oz.	1 Oz.	1 Oz.	15 Oz.	1½ to 2 Oz.
1 to 2 Months	7 Oz.	1 Oz.	1 Oz.	15 Oz.	2 to 3 Oz.
2 to 3 Months	10 Oz.	1 Oz.	1 Oz.	15 Oz.	3 to 4 Oz.
3 to 4 Months	15 Oz.	1 Oz.	1 Oz.	15 Oz.	4 to 5 Oz.
4 to 6 Months	20 Oz.	1 Oz.	1 Oz.	15 Oz.	5 to 6½ Oz.
	(Whole Milk)				
7 to 10 Months	25 Oz.	1 Oz.	1 Oz.	10 Oz.	7 to 8 Oz.
10 Months and Upward	32 Oz. (1 Quart)	1 Oz.	1 Oz.	8 Oz.	8 to 10 Oz.

In the number of feedings per day, the schedule suggested in the time-table for nursing, page 2630, should be followed, always with pains to avoid overfeeding. The increase in the amount of each feeding should be made gradually, and the increase in the strength of the food should be made gradually. For instance, instead of suddenly adding five ounces of milk at the end of a month, it would be better to add an ounce at a time each week, but observing the general progress indicated in the table. If the baby vomits after feeding, through excess of food, although apparently digesting some of it and gaining continuously, simply give a half ounce or an ounce less to each feeding.

In the case of my children, weaned at six months, whole milk was used, gradually introducing the milk feeding each day, taking about one week to complete weaning. Two or three times a day a bottle of boiled water which had been aerated and sweetened with milk sugar was given. A half or a whole orange was fed from a spoon each day, or else it was slightly diluted and strained and fed from the bottle. If juice of an orange was not given, a teaspoonful of lime water was mixed with each bottle of milk. Even with orange juice it may prove advisable to add the lime water to milk. When the child was not eager for food, water was given.

When the slightest evidence of illness of any kind appeared, boiled sweetened water was given instead of milk. The water was sweetened with honey instead of sugar of milk. Honey in nearly all cases had a laxative effect.

Our other kiddies were weaned when they were from one to two months of age, this being necessary because of the very nervous temperament of the mother. In nearly all cases, under such circumstances, the mother's milk is unsatisfactory and the child will progress more safely and satisfactorily on cow's milk. In cases of babies weaned at ages ranging from one to four months, the schedule found in the previous table was followed with the exception of the quantity of water used.

The water was lessened by half, and two or three feedings of water alone were given to the little one between feedings of milk during the day. This method enables the infant to settle for itself the amount of water it needs to digest its food. Special care should, of course, be used in feeding whole milk to be sure that the infant can digest it, but it is somewhat safer to give water in between feedings, as the instinct of the child is usually a better judge as to how much liquid it needs to aid the digestion of the nourishment it requires.

Milk should never be fed with a spoon to a child at any age; it should always be given from a bottle. The sucking process forces the saliva in the mouth and thus mixes it with milk, an important part of the digestive process.

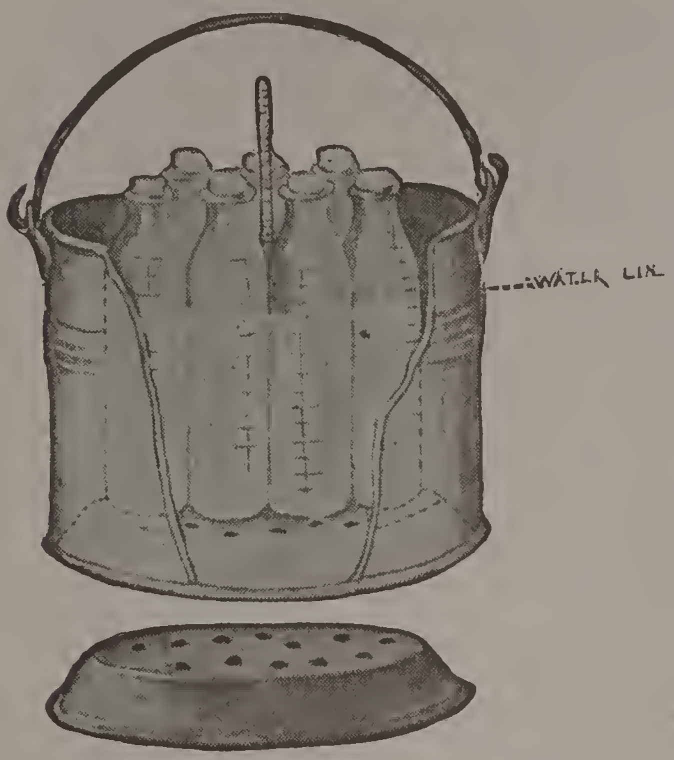
Do not be afraid of fasting the baby at times. A fast of one day, during which period the child is given only water sweetened with sugar of milk or honey, is of very great value in remedying ailments of various kinds. It represents a certain cure in practically every instance. In some few instances where the complaint is considered serious, even a two days' abstinence from milk freely using water sweetened with honey will be of great advantage. Sweetened water given in this manner will fill the infant's little stomach and will satisfy it for a time and the system is thus given a chance to remedy difficulties that may prove serious. Nine-tenths of the infantile deaths are due to improper or over-feeding.

Mal-nutrition, the inability to digest or gain weight from food, is in most cases caused by over-feeding. A one or two day fast followed by the right sort of feeding methods will often bring about an immediate change for the better. This is especially true where aerated boiled water, as described, is given between two to four feedings during the day.

As nearly all infantile ailments are caused by over-feeding, about the first thought to keep in mind whenever an ailment of any kind appears, is to clean out the stomach. This can be done very effectively with infants by tickling the throat with the finger and in this way inducing vomiting. By continuing this process the stomach can be thoroughly cleansed and often this means alone will effectively prevent the development of a complaint that might become very serious.

When a meal does not agree with the child, this plan can be used advantageously. Be sure to remember the very great importance of depending on boiled, aerated water, sweetened with honey for nourishment when you are doubtful of giving the child its ordinary food—milk.

Nipples with only a very small perforation should be used, in order that the food be taken very slowly, allowing from ten to twenty minutes to finish the bottle. When turned upside down, it should only drop from the nipple, but never pour in a fine stream. This is very important. If you perforate the nipple yourself, first stretch it over a cork, then puncture with a fine needle made red hot. It is well to use nipples that can be turned inside out to permit thorough cleaning. They should be sterilized by boiling every day, then kept in a boracic acid solution while not in use and rinsed in boiled water before using.



Improvised method of Pasteurizing milk at home in case the milk is of doubtful quality. The milk, modified as desired, is first bottled in quantities required for each feeding, the bottles then being placed in a pail or pot of water, the water line even with the top of the milk in the bottles. The bottles should rest upon a false bottom made by a pie tin or shallow pan punctured with holes and inverted, as shown in the smaller figure underneath. A thermometer is placed perpendicularly in the water among the bottles as shown. The water is then heated to the desired point, (150 or 167 degrees Fahr.,—see text,) whereupon the whole is removed from the fire and wrapped in warm blankets or other coverings to preserve the temperature for twenty minutes. Cool bottles in running cold water and place in refrigerator.

The quality of the milk is a matter of great importance. It seems unnecessary to say that it should be as fresh as possible, and that the conditions under which it is prepared should be as nearly perfect as possible. Cleanliness is a vital consideration in determining the character of the milk, and in cities where the supply is of doubtful character it is well to secure certified milk, if it is to be had. Even this may not be all that is desired, but it is safer than the use of ordinary milk. Lime-water prevents souring.

Pasteurizing is often recommended as a means of safeguarding against disease germs. As a general rule, good, fresh milk is much to be preferred to that which is pasteurized. At the same time, if the character of the milk is doubtful, as it may be in large cities in the summer time, it may be desirable to pasteurize it. The process is that of heating the milk to a temperature of 167 degrees Fahr., for a period of twenty minutes, this being intended to destroy most of the germs causing intestinal diseases in children, without seriously impairing the food value of the milk as would be the case if it were sterilized by boiling. Boiled milk is utterly unfit for infants. Pasteurized milk will keep much longer than ordinary milk.

If there is any special reason for using pasteurized milk, the process can be accomplished at home in a very simple manner. The baby's food should first be bottled in the clean nursing bottles in the quantities required for each feeding, and these bottles should then be placed upright in a pot or pail of water. A false bottom should be placed in this pot or pail, so that the milk bottles will not rest directly on the bottom. This false bottom may be made by puncturing fairly large holes in a pie-tin or shallow pan which is then placed upside down in the pot, the bottles resting upon it. The water should come up to the level of the milk in the bottles, and a thermometer, placed in the water, between the bottles, and also standing upright, will register the temperature. The water should be heated 165 to 167 degrees Fahr., whereupon the whole should immediately be taken from the stove and placed in a fireless cooker or wrapped around well with blankets or heavy cloths to retain the heat. After twenty minutes take out the nursing bottles, and after cooling by placing the bottles in cold water, place in a cold refrigerator until used.

Milk is sometimes pasteurized at a lower temperature, for instance, 145 to 150 degrees, which is perhaps just as satisfactory in most cases, and less inclined to impair the quality of the milk.

Condensed milk is much used for the feeding of infants among the poorer classes of people in large cities. It seems to be fairly satisfactory in some cases, but in a general way is the least desirable form of artificial feeding. It may be used temporarily, "in a pinch," as it were, as when traveling or failing in a regular supply, but its exclusive use is followed in a very great number of cases by *rickets* and other disorders which arise from imperfect nutrition. The unsweetened "evaporated cream" is utterly unfit for use under any circumstances, being only condensed milk without the sugar, and seldom even palatable. Only the best grades of sweetened condensed milk should ever be used, for some are made up from skimmed milk. One may naturally judge that the cheaper brands are of this class. One objection to condensed milk is that there is too much cane sugar in it, from ten to sometimes fifty per cent. It should be diluted from fourteen to seven times, according to the age of the infant, in order sufficiently to reduce the proteids, and the proportion of fat then becomes very much too low. Therefore condensed milk, if it must be used in feeding the baby, would be made very much more satisfactory by adding from one to two ounces of pure, fresh cream to each eight ounces of the milk as diluted for feeding.

Older children also require a certain amount of care and discrimination in feeding. Errors of diet are detrimental at any time of life, but especially so in childhood. Perhaps the most common and serious of all these errors is persistent overfeeding, and the habit of eating between meals. Children should be restricted to a limited number of wholesome foods, for too great a variety and the use of fancy dishes will greatly impede their development and impair their health. Candies and confections should not be taken in excess. Rich desserts should be avoided.

Milk should be used freely throughout childhood. It is regarded as very important food until the child is supplied with a full set of teeth. Milk should always be given from the bottle. Meat may be used occasionally where there is a craving for it. In fact an exclusive meat diet is sometimes of great value in treating childish disorders in which an exclusive milk régime does not seem to prove effective. In addition to the use of milk the best foods for childhood are fruits, which should be used freely, eggs, whole wheat bread, cereals and vegetables. Cereals, served with cream or mixed milk and cream, should be used without sugar. They may be sweetened with dates or raisins, or perhaps with honey. If sugar is desired, brown is the best, though molasses is still better than sugar. Honey is a splendid and healthful sweet, while dates, figs, raisins and other sweet fruits may be depended upon for supplying the sweets demanded in childhood. It would be better if sugar were eliminated entirely.

The second year will require the continued use of milk, as already suggested, and this should preferably be taken in a bottle so that it will be consumed very slowly. Orange juice should also be given freely, though not at the same time as the milk. Strained orange juice may be given in the latter half of the first year, also, if the child likes it. The white of the egg, very slightly cooked, as by a little boiling or steam-poaching, may be given during the last three months of the first year and the first few months of the second year, and after that the entire egg. Coddling is a satisfactory method of preparing an egg, placing in boiling water and immediately taking off the fire, to stand for five or six minutes, after which the contents will be nicely jellied but not too hard. A still better method is to place the egg in cold water, then place over a fast fire until the water comes to a boil, at which point immediately take out the egg and immerse in cold water to stop further cooking.

Cereals may be given with a spoon from the beginning of the second year, but whole wheat bread toast may be given at the same time, without butter. This, or zwieback, may be given first in the meal, to chew on, the egg or cereal and the milk to follow. Dates, mashed in water, and sifted, may also be given with advantage early in the second year. The orange juice may soon be supplemented by other fresh fruits, or preferably their juices, strained. The child will not be ready for vegetables until a year and a half or two years old, when such vegetables as white potatoes, squash, spinach, asparagus tips and peas may be used, at first in moderate quantities. All vegetables are best baked, and thoroughly cooked. Cucumbers, radishes, egg-plant, cabbage and other vegetables more difficult to digest, should be avoided in the early years of childhood.

Four meals only should be given in the second year, and one or two of these simply a feeding of milk, modified or not as may seem best. Three meals will prove satisfactory in many cases, and should be observed after the second year, without any piecing between meals. Two meals may be a better arrangement in later boyhood and girlhood.

The third year and after the range of foods can be gradually extended, but always avoiding white bread, pastries, cakes and other white flour products, and still observing simplicity in the menu. Vegetable soups will be of great value, such as purées of peas, asparagus, celery, beans and the like. These are made very tasty with tomatoes, onions and other natural appetizers. Baked beans later on will provide a very hearty and strengthening food, baked with olive oil or butter instead of pork. Nuts may be used as soon as the teeth are well formed and the child is able to fletcherize them, but they should be used as food at meal times only, and never as delicacies between meals. It is most important that they be thoroughly chewed, and if the child cannot be taught great thoroughness in this respect it may be better to avoid them during the second and third years. They are very rich and nourishing, however, and if they agee will be valuable childhood food.

Desserts should be restricted to the most plain and simple varieties. Raisins, dates, figs and various fresh fruits may be considered as the most satisfactory of all, though baked apple, without sugar or cream, is splendid. Apple sauce, stewed prunes, apricots, or other stewed fruits, rice pudding, tapioca puddings, plain custard, and other desserts of this kind may be recommended. A very little pure, home-made ice-cream may be permitted at intervals of several days.

Beverages should be restricted to water and milk, though the latter is rather a food than a beverage. Milk should always be warmed a little during the second and third years, in order not to chill the stomach and interfere with perfect digestion. Ice-water should be strictly avoided, or any very cold water.

Children should never be urged to eat, and should not be asked to eat anything which they do not enjoy. Gluttony is a habit easily acquired and should be discouraged. Sweet things, if included in a meal, should not be given until after the simple, substantial foods have been finished, for if given first they will clog the natural appetite. Unpleasant topics of conversation should be avoided at the table, and above all things, children should be taught to masticate to the limit. If there are several children, get them interested in trying to see which can masticate his bread the longest. Never permit haste at the table, and do not let "wash down" any food by liquids. See also the general discussion of *Diet* in a previous volume.

GENITALS, CARE OF.—The care of the genital organs in infancy is summed up in strict cleanliness, which applies equally at all times of life. The parts should be washed every day with the aid of fresh absorbent cotton, each piece being thrown away or burned without using a second time. Boric acid should be used, and the parts should be washed several times daily if there is any inflammation or discharge. In handling girl babies, great care must be used to avoid irritation or infection from soiled diapers. Immediate and thorough washing is desired on all such occasions. In male infants, the foreskin or prepuce should be pushed back for thorough but gentle washing.

Lack of care may lead to a degree of irritation which will develop the habit of masturbation. For this reason the washing must be thorough. There are a few cases, among female infants, in which a hooded clitoris may require an operation similar to that of circumcision.

Circumcision may be advantageous in a limited number of cases, but as a general thing is not necessary. (See reference to *Phimosis* and to *Circumcision* in Chapter VIII of this Volume). If there is an adhesion it may usually be overcome gradually by the gentle pressure of water or boric acid, introduced by means of a small syringe into the space between the prepuce and the glans, through the regular opening of the prepuce. This treatment offers the best means of dilatation, and should be practiced daily until the difficulty has been remedied.

GROWTH AND DEVELOPMENT.—*The weight* of a child is the most important indication of its proper growth and welfare, and should be noted from time to time, preferably once each week in the early months. Normal babies may weigh from six and a half to fourteen pounds, though the average normal weight is about seven and a half pounds, with girls a trifle lighter than boys. Most of the stories of great weight in babies are simply the expression of the enthusiasm of fond parents.

There is usually a decrease in weight of perhaps a half pound during the first few days, because alimentation is not immediately established, and there is some loss through the passage of urine and meconium. But after the first week the child should gain from five to eight ounces each week for the first six months, and after that perhaps a quarter of a pound each week until the end of the first year. The normal infant of average weight will usually double its weight in the first five months, and treble it by the end of the year. Bottle-fed babies are thought usually to gain less rapidly than those breast-fed, but either one should weigh from twelve to thirteen pounds at three months, fifteen to sixteen pounds at six months, seventeen to eighteen pounds at nine months, and twenty to twenty-two pounds at one year. The gain may be irregular when teething, but any other variation from the usual gain should be considered. There is sometimes a rapid gain in weight on patented food without a satisfactory gain in strength or in other respects. Remember that exceptional fat is not desirable in infancy any more than at any other time of life, although the normal infant is naturally smoothly rounded and plump.

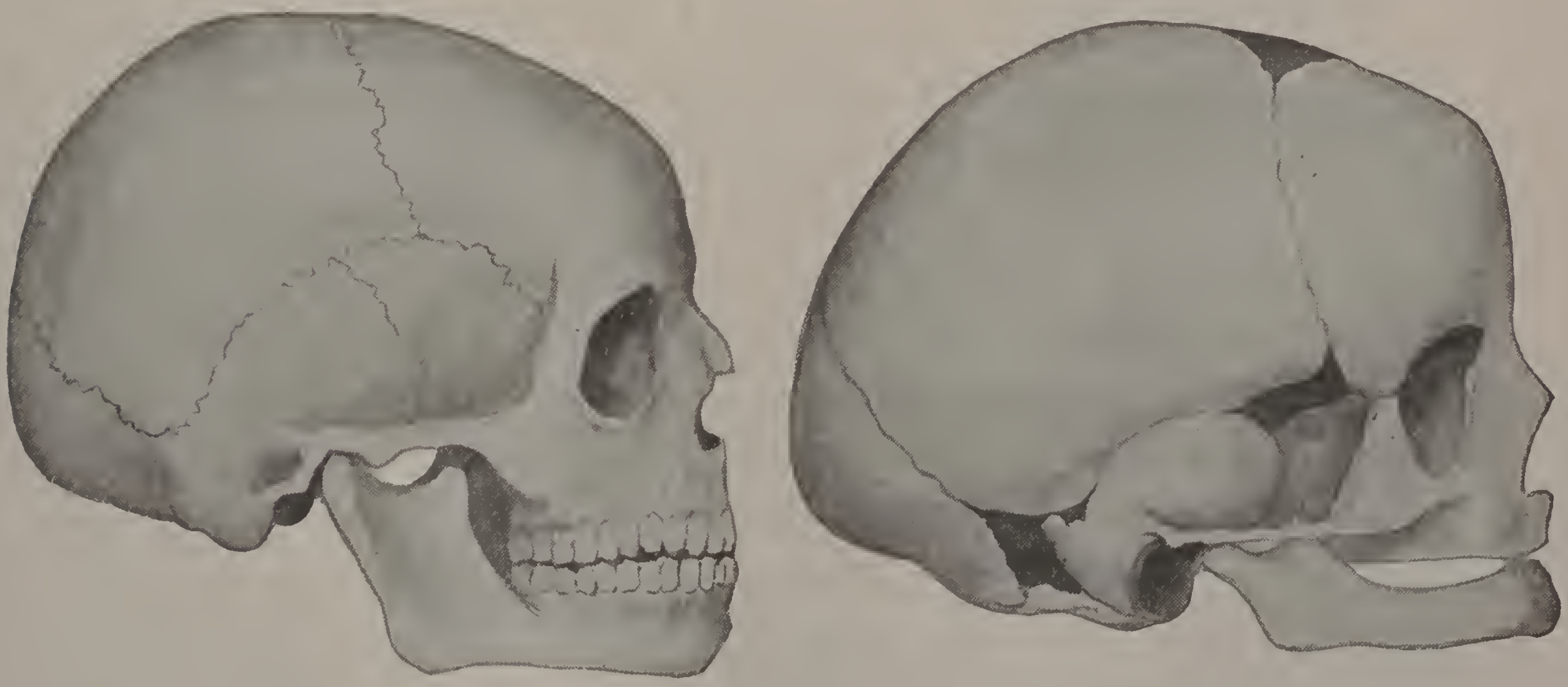
TABLE SHOWING AVERAGE GROWTH DURING FIRST FIVE YEARS.

AGE	HEIGHT	WEIGHT	AGE	HEIGHT	WEIGHT
Birth	19 in.	7½ lb.	9 Months	25½ in.	18¾ lb.
1 Month	20 “	8¾ “	10 “	26 “	19½ “
2 Months	21 “	10¾ “	11 “	26½ “	20½ “
3 “	22 “	12¼ “	1 Year	27 “	21½ “
4 “	23 “	13¾ “	2 Years	31 “	27 “
5 “	23½ “	15 “	3 “	35 “	32 “
6 “	24 “	16 “	4 “	38 “	36 “
7 “	24½ “	17 “	5 “	41 “	40 “
8 “	25 “	18 “			

Regarding later childhood development, we may say that the weight, taken at one year, is approximately doubled at five years, and this again is approximately doubled at twelve years. There are naturally many variations from the average standards, and without indicating any abnormal condition, except where there is failure to gain steadily in the first year or a marked discrepancy in the later years. Remember that the figures in the accompanying table are general, or average, and cannot be expected to apply to all individual cases, even when they are normal and healthy.

The height of a normal child born at full term is from nineteen to twenty inches, with girls perhaps very slightly shorter, on an average. As a rule one may expect a gain of from seven to nine inches the first year, about four inches each the second and third years, and after that about two inches per year on an average until reaching the final stature, though sometimes with marked variations in this respect.

The chest measurement is perhaps more important than the length or height of the child, and its growth should be noted every few months. The average normal chest measurement at birth is about thirteen inches and should gain about four inches during the first year. By the third year the chest should be considerably larger than the head.



Comparison of proportionate outlines of skull of adult and of a new-born child. Note fontanel at the top, also far greater comparative growth of the front part of the head between infancy and maturity. The jaw-bones especially show a marked development.

The circumference of the head at birth in the average case is between thirteen and a half to fourteen inches, growing some four inches during the first year and after that a half inch each year for twelve years. The lower jaw is much undeveloped at birth, and consists of two bones which grow together into one during infancy. At the top of the head near the front and at the back are two spots which at birth are not covered by bone, but only by a membrane and the skin. These are called *fontanelles,* through which the pulsations of the brain may be felt. Care should be used that the baby will not be struck on the head at these points. In the course of the normal development of a well nourished child, these fontanelles should be closed by the formation of bone tissue at any time from one year to a year and a half of age. All of the bones of the new born infant are largely cartilaginous, gradually hardening with the increasing deposits of mineral matter. See also *Teeth in Childhood,* this chapter.

The normal condition and growth of a child may be determined somewhat by its progress in learning the use of its muscles, in sitting up, creeping, walking and playing. Remember, that some children develop more slowly than others in these respects, and, other things being normal, there is no reason for alarm if one child is more tardy than another in certain activities.

The normal child will usually hold up its head at three or four months, sometimes much earlier if properly clothed so that it has perfect freedom of movement in which to develop its muscles. The baby may be expected to smile at about four weeks and to laugh out loud at from three to five months. At five to seven months it will reach for toys and handle them, and at six or seven months will sit up erect without support. The normal child usually creeps at eight or nine months, at nine or ten months it tries to stand with the help of a chair, walks alone at about one year, and runs at about fifteen or sixteen months, seldom falling. The child should not be urged to walk, for it is a matter of growth, both in mental co-ordination and in strength of bone and muscle. Particularly should large and bony babies not be encouraged to be on their feet before their natural impulses prompt such activities.

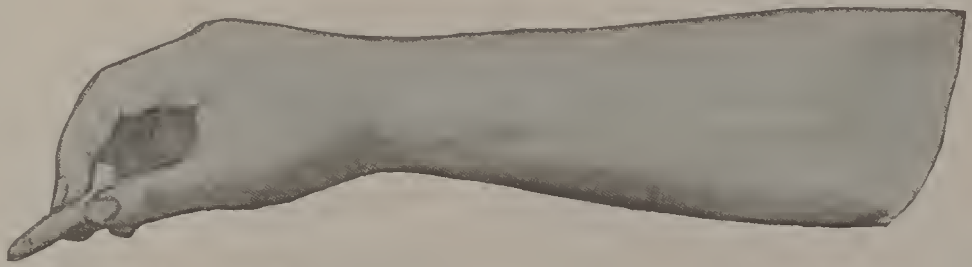
At one year the average child will say "Papa" and "Mama" and perhaps a few other single words, while a child of two years will put them together in short sentences.

HOLDING THE BABY.—See *Carrying the Baby.*

MOUTH, CARE OF.—Though Nature has provided for keeping the mouth clean by means of the saliva, yet in early infancy the secretion of the latter is so limited that special care is desired in keeping the mouth clean and wholesome. *Spruc* or *thrush* is entirely the result of uncleanliness, and should be treated with repeated washings of the mouth with boric acid. See Volume IV for detailed discussion of this disease.

The baby's mouth should be washed daily, most conveniently after the general bath. If a finger is used in washing it, the little finger is preferred, wrapped around well with absorbent cotton or a soft cloth. Either boric acid or salt water should be used, in the latter case employing a weak solution, a pinch of salt to a glass of boiled water.

NAVEL, CARE OF.—In the care of the navel at birth it is well to do as little as possible after it is first dressed, and this first dressing should be very simple. It is desired that the cord shall dry up, and this naturally requires that it be kept as dry as possible. It should not be touched during the first week when bathing the rest of the child, unless the dressing is wet with urine.



The use of a small cone or "finger" of absorbent cotton for cleansing the nasal passages and the ears. (See text.) A small wad of cotton is slightly twisted to take this form. Matches, toothpicks, hairpins and other hard articles should never be used in the nose and ears, even when wrapped with cotton or cloth.

In dressing the cord, a pad of antiseptic absorbent cotton wrapped in sterile gauze may be placed around the navel fairly close, the cord then being laid over this upward and to the left side, after which another pad of the cotton may be laid over it all, then held in place by the regular flannel band, described under *Clothing,* which, however, should not be fastened too tightly. It should only be strong enough to hold the navel dressing in place. After the cord falls off, which is usually in five to seven days, a dressing of antiseptic cotton may be continued for a few days until everything is thoroughly healed.

If there is bleeding from the stump of the cord, another tighter ligature should be tied around it. If the navel is moist and inflamed, or if there is a discharge, either before or after the cord drops off, it may be dried up by dusting with some antiseptic powder twice a day, for instance, boric acid, or mixed boric acid and starch.

Rupture or hernia of the navel is occasionally met with in young infants. It is a grave mistake to fasten abdominal bands tightly with a view of supporting the abdomen or preventing rupture, for the pressure upon other parts of the abdomen is very likely to cause just such a rupture at this point. Proper treatment is given in Volume IV, under *Navel Diseases* and elsewhere in this chapter. (See *Rupture in Infancy.*)

NOSE, CARE OF.—Breathing is the most vital of our activities, and it is important that the habit of nasal breathing should be established from earliest infancy. Upon this depends not only the satisfactory oxygenation of the blood, but also the prevention of adenoids and other disorders. The nostrils should therefore receive attention each day, following the bath, along with the eyes, ears and mouth, and if clogged should be attended to many times each day.

The loop-end of a hairpin is commonly used in cleaning a child's nostrils, but is to be condemned for the purpose. Nothing hard and stiff should be used. The best plan is to take a wad of absorbent cotton and twist it into a small finger or cone perhaps an inch long (see page 2649), thus providing a soft and effective means of removing accumulated mucus. It is well first to use a cotton cone dipped in boric acid, twisting after inserting, to soften or moisten the membranes and mucus, after this using two or three dry cones, or more if necessary, to remove any accumulations. If there is mucus, it is well to put a drop of olive oil in each nostril to loosen it.

NURSERY.—See reference to outdoor nursery under *Air*.

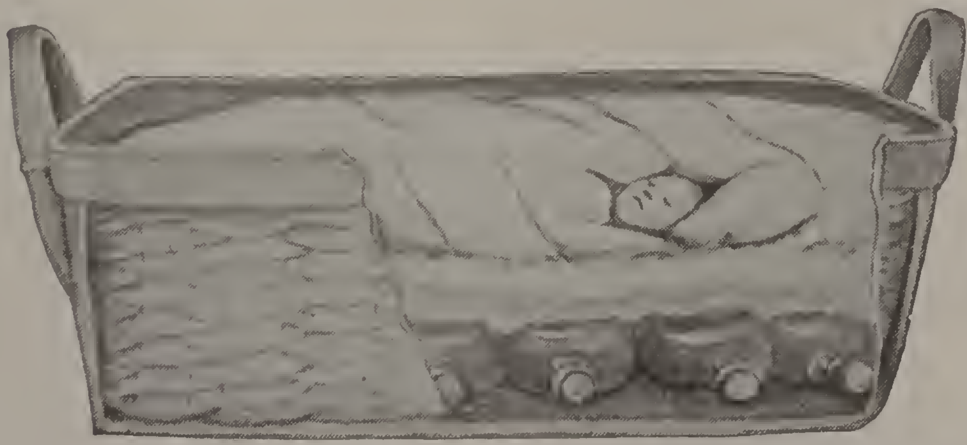
NURSING.—See *Feeding*.

PLAY.—See *Exercise*, under *Training of Children*.

PREMATURE INFANT.—A premature infant is one born before the expiration of the normal full term of 280 days. Those born at twenty-eight weeks or after have a good chance of living with proper care, and while those born at twenty-four weeks usually die within a few hours, yet it has a possible fighting chance for life which should be made the most of. It is well in such cases to place the child in an institution where there are all conveniences for taking care of it properly, including the so-called "incubators," of the best types. But something should be known of the best immediate care in such cases.

Exposure is a serious thing with a premature infant. It should be wrapped immediately in soft warm flannel blankets and placed in a basket or other handy receptacle which has been lined with hot water bottles at bottom and sides, covered with generous layers of cotton-wool. (See illustration.) If a regular incubator is available, so much the better, but it usually is lacking in the emergency. However, a home-made incubator may be improvised from a good sized wooden box after the manner suggested in the accompanying illustration, the air being warmed by hot water bottles, heated bricks or flatirons.

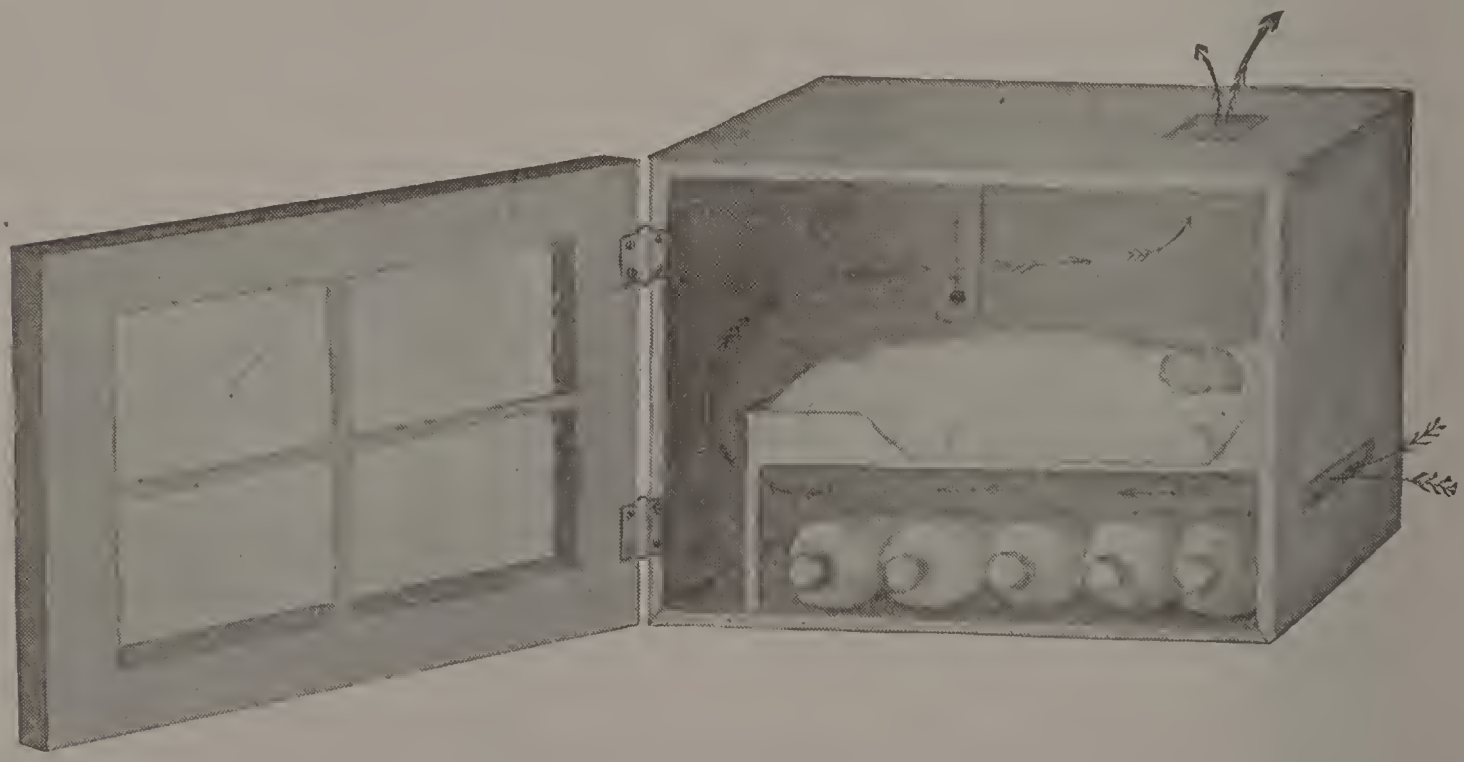
The premature infant should not be bathed, for it has not sufficient vitality to recuperate. As soon as convenient after



A temporary improvised "incubator" for a premature child, which may be used until better arrangements can be provided. Warmth is supplied by hot water bottles, these being well covered with layers of cotton wool to provide a comfortable bed. A clothes-basket or any large basket may be used or even some other receptacle of suitable size.

birth, and in a very warm place, the little body should be oiled with warm olive oil, exposing only a part at a time, and then well wrapped around with warm absorbent cotton, the face only exposed. Separate pads of cotton should be placed at the groin and buttocks for convenient removal when wet or after a movement of the bowels. It is better to give no baths for several weeks, changing the cotton and applying oilve oil fresh every other day. In the incubator it should be kept in atmosphere that is pure, but warmed to a temperature of 85 to 90 degrees, or even a little higher if the infant is only a couple of pounds in weight, or born before seven months.

Feeding should be permitted at intervals of an hour and a half at first, the breast milk always preferable. It may be advisable to withdraw some of this by means of a breast pump and perhaps even then to dilute it slightly with boiled water. If cow's milk must be used, it should be modified by diluting with even more water than suggested, under *Feeding,* for the



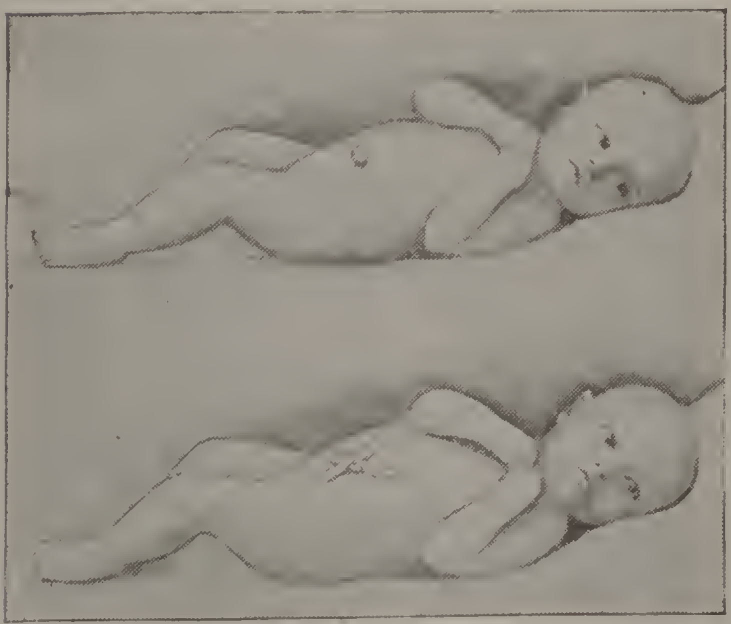
Home-made "infant incubator," for an emergency or premature birth. Can be made of a good sized box, with the bed placed upon a shelf extending across the width of the box, and a space at one end to permit the circulation upward of the air from below. The air enters through an opening, below, at the other end, is warmed by passing over hot water bottles or heated bricks in the lower section, then enters the upper section where the child is placed, and finally passes out through another small opening at the top. A thermometer is placed where easily seen without opening the glass door. The hot water bottles should be changed as necessary to keep up the proper temperature. The door must be of glass so that the child and thermometer may be observed without opening. An old window may be used for this door, fastened on hinges, as in the illustration, or perhaps an old wooden picture frame with its glass may be used, the picture and back removed. In cities, it may be best to place a premature child in an institution with the most improved incubators and scientific care, but in remote districts even a home-made arrangement may be the means of saving a young life.

use of an infant born at full term, for instance, two or three ounces of top-milk to fifteen ounces of boiled water and one ounce each of milk-sugar and lime-water.

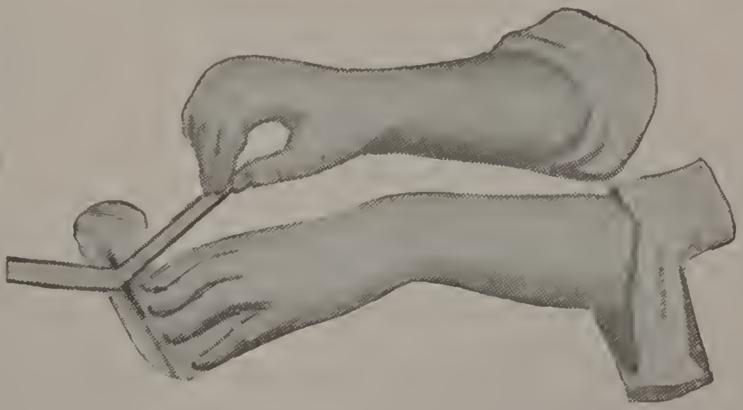
The premature infant should be handled as little as possible, and the aim should be to provide warmth, quiet and freedom from strong light, conditions which prevail in the natural environment of the infant before its normal birth at full term.

RUPTURE IN INFANCY.—Roughly speaking, there are three points at which rupture or hernia may take place in infancy, at the navel, in the groin and in the line between the navel and the lower end of the sternum. Other ruptures are possible, but extremely rare.

Umbilical hernia, a protrusion of the intestine at the navel, is the most common variety of rupture in infancy, and has been briefly considered in Volume IV under *Navel Diseases.* Owing to the fact that the large blood vessels contained in the umbilical cord enter and leave the body of the infant at this point during life before birth, there is considerable opening here, leaving this a comparatively weak point in the abdominal wall during the first few days or weeks after birth. Pulling on the cord during birth, distention of the intestines or even violent crying may result in rupture, though it is a very simple disorder and readily remedied by proper treatment.



The upper picture shows appearance of umbilical hernia, or navel rupture. The lower figure treatment for retaining the rupture after it has been reduced, consisting of a round padded and covered button, placed directly upon the navel, and held in place by two strips of adhesive plaster.



Another effective method of treating a navel rupture in infancy, using a wide strip of adhesive plaster, first reducing the rupture, pushing the flesh into a fold over the navel, and then applying the adhesive tape as shown to hold it there. This practically makes a "pad" of flesh and skin, with which to hold the rupture in.

It is above all things necessary to provide some support in the form of a pad to prevent the protrusion of the intestine after the hernia has been "reduced," or that is to say, gently pushed back into its normal place by manipulation. Elastic belts have been recommended, but are not generally satisfactory because of their tendency to constrict the entire abdomen. One of the best methods is to take a fairly good sized button with a convex face, and cover it with soft chamois skin, placing this over the navel and holding it in place with two strips of one inch wide adhesive tape crossing each other. If this is loosened in four or five days it should be renewed, with a new clean button. If the adhesive tape seems to irritate the skin, then apply olive oil to the irritated part and shift the new tape to a different position. In other words, if the first dressing has the two strips placed one horizontally and the other vertically over the stomach, the next dressing can have the two strips running diagonally across the stomach.

Another satisfactory treatment consists of the use of a single piece of broad adhesive tape in the manner suggested in Volume IV. Having reduced the rupture, the skin from both sides is stretched toward it, forming a deep fold of skin over the navel. This practically forms a pad of flesh or skin, and it is held in place by the adhesive plaster applied first on one side and then on the other, while the fold of skin is held in place. (See illustration.) Either of these treatments must be kept up persistently, without allowing the rupture to protrude at any time, and as soon as possible exercises which strengthen and develop the muscular walls of the abdomen should be given. In the rapidly growing structures of a young child's body a rupture will mend very quickly.

Ventral herniæ are not very common but should not be neglected when discovered. They occur along the middle line of the body between the navel and the breastbone, though sometimes below the navel. They are usually very small, sometimes only the size of a pea, and may be overlooked or mistaken for some other form of simple growth or tumor. They may be recognized from the fact that they disappear under pressure.

They may be painful. The cure consists of mechanical support such as that for umbilical hernia, together with exercise to strengthen the muscles and thicken the abdominal walls until the opening closes up naturally.

The groin may be the seat of *inguinal rupture* in infancy or childhood as well as in adult life, though as a rule only in males. Sometimes the inguinal canal does not close as well as it normally should after the descent of the testis from the abdominal cavity into the scrotum, and in such a case a hernia is more likely. When the loop of the intestine even descends into the scrotum it is a *scrotal hernia.* The nature of inguinal and scrotal hernia is made clear in the discussion of *Rupture* in Chapter VIII of this volume.

Inguinal and scrotal herniæ may be recognized by the possibility of reducing them with a little very gentle manipulation, the patient lying on his back. It may be distinguished from hydrocele by the fact that, in reducing, it finally goes back quickly with a gurgling sound. Hernia gives an impulse when coughing that may be distinctly felt, hydrocele does not. On light percussion, a tumor from hernia is resonant, hydrocele dull. A hernia is opaque to transmitted light, hydrocele translucent.

These ruptures are readily cured in infancy by means of exercise because of the rapid development and growth of all tissues during the first year. The part should be thoroughly protected with a well-fitting truss, however, and one should have changes of this for the sake of cleanliness. Usually a covering of india rubber is desirable to avoid wetting with urine.

Femoral hernia is seldom found in infants.

A congenital hernia is a form of inguinal hernia in which the vaginal process of the peritoneum (see *Anatomy of Testes,* Chapter VII) has remained open, so that the intestine descends directly into the scrotum in contact with the testicle. By suitable and very gentle manipulation this may be reduced the same as other inguinal herniæ and held in place by a proper truss.

It is always imperative that a rupture of any kind should be reduced and properly supported. Sometimes it will not occasion any pain or special inconvenience, but it must not be neglected either then or under any other circumstances. If it is found to be irreducible, the help of an expert should be secured.

It sometimes happens that infants are supposed to be suffering from colic when they are the victims of hernia, perhaps constricted. It is well, therefore, to make a careful abdominal examination from time to time, and especially in case of much crying and suspected colic.

Constipation seriously aggravates any form of hernia, and any tendency in this direction should be carefully and thoroughly combated.

SLEEP.—The growth of a child is very rapid the first few months, doubling its weight in five months. Because of the rapid tissue changes, sleep is all important. Growth depends largely upon sleep at this period. In the beginning the baby should sleep almost all the time, perhaps twenty-two or twenty-three hours out of the twenty-four. After a couple of months it should sleep from fifteen to eighteen hours. Between one and two years of age there should be a sleep of at least ten hours at night and two to four hours in the afternoon. This afternoon nap to be continued, if possible, up to the age of four or five years. During this entire period, growth, appetite and vitality depend very largely upon this afternoon nap, for the mere sleep at night is scarcely sufficient. Even up to ten or twelve years of age it is well to make certain that the child will have at least ten hours of sleep at night. The windows should be wide open, if necessary using extra covering in winter to make certain of warmth.

Regular hours for sleeping are important during both infancy and childhood. The child should not be rocked to sleep, but should be placed in its bed at the proper time, and if trained in this way will go to sleep naturally. Sometimes it is only necessary to change the position to make the baby comfortable.

Most parents during the first few months of their child's life *teach* it to cry for what it wants, forgetful of the fact, that of all of earth's lessons this is one of the hardest to unlearn, and yet one that inexorable necessity demands that we unlearn. The mother who feeds her child every time it cries; the father who gets up at all hours of the night and carries his child to and fro in his arms; the friends who give to the child whatever he asks for when he cries; the nurse, who, to quiet the child's screaming, picks up a toy twenty times in succession, simply to see the child throw it down again, are pitiable fools and unkind to the child, in that they are training him to a habit a cruel and relentless world will compel him to break later on at a cost of many bitter tears and hours of agony.

In these early months you are the one to know what the baby needs. His body demands food, but only at certain intervals. Teach him from the start he cannot have it at any other time than those intervals, and that *crying never brings it.* If he cries at the time of feeding, soothe him and get him quiet, at all hazards and costs, *before* you feed him, and the lesson once learned he will never forget.

All reasonably healthful children should sleep through the whole night without food, after the first month or two. Begin by putting him in his own cot, *awake,* and then if he cries in the night, see that he is clean and comfortable, change his position, give him a spoonful of cold, pure water and put him back again.

At the outset teach your child, where possible, to sleep alone, upon a hard mattress, without a pillow if possible and if with one let it be as small a one as can be obtained. The less covering on the bed the better, provided there is warmth enough. Personally, I believe it well for children to be taught to sleep in "the altogether." Nightgowns are unnecessary and the more freedom the skin of the child has the more hardy it becomes. Whenever it can be so arranged let the child sleep out-of-doors from its birth. In the city or in the country this is always an advantage. Even in the city the night air is far purer than the day air. See general suggestions on *Outdoor Sleeping* later in this volume.

Sun Baths.—See under *Bathing.*

Teeth.—The first set of twenty teeth, or the "milk-teeth," are already in existence in an embryonic form at the time of birth, their formation having commenced early in fetal life. Occasionally a child is born with one or two teeth already cut through the gums. As a rule, however, dentition or teething begins at six or seven months and ends at about two years, with ten teeth in each jaw. According to their development they usually appear in groups, the first *two lower incisors* at six to eight months, the *four upper incisors* at eight to ten months, the *two lateral lower incisors* and *four first molars* at about one year or a little later, the *four canines or eye teeth and stomach teeth* at about a year and a half, and the *four second molars* at about two years or a little later.

Teething sometimes gives rise to considerable disturbance of the nervous system as a result of the irritation, thus affecting the appetite and functions of the body generally. As a rule, the more healthy and vigorous the child, the less trouble. If the appetite fails, do not attempt to enforce feeding. Even a fast of one day will often be advantageous. Give plenty of pure, cool water.

The gums, naturally a pale pink in color, become red and swollen when teething. Lancing is often practiced to give relief, but is not advisable except in unusual cases. It is better to leave the process to Nature, and to permit the child to bite on suitable hard objects as much as he pleases.

A healthy child will sometimes cut teeth without any trouble whatever. Sometimes disorders due to improper feeding or other sources are mistaken for the results of teething. Sometimes the first tooth does not appear in the first year, and though this is often the result of imperfect nutrition or retarded development, perhaps following some severe infantile illness, yet it does not always indicate anything abnormal and need not occasion alarm if other conditions are normal.

At about the sixth year four additional molars are added, the "first molars" of the permanent teeth. At this time also the temporary teeth commence to fall out and to be replaced by the permanent teeth, in the order of the first appearance. At the age of twelve the second dentition of childhood is completed, with twenty-eight teeth. The four remaining molars of adult life, the so-called "wisdom teeth," arrive at or near maturity, varying in different individuals from the age of seventeen to twenty-five years.

TEMPERATURE.—The temperature of an infant is likely to vary more than that of an adult and without indicating an abnormal condition so serious as in a similar variation in the temperature of an adult. In a child it is a prolonged high temperature that indicates serious trouble rather than its mere elevation for a few hours.

The baby comes into the world with a temperature of about 99 degrees Fahr., which within an hour, as a result of the changed environment, drops two or three degrees, sometimes even to 95. It soon rises again, however, and after regular feeding is established it remains between 98 and 99 degrees, usually dropping about one degree at the time of the daily bath.

TRAINING AND EDUCATION OF CHILDREN.—In discussing education in conjunction with the training of children, my chief purpose is to point out the errors into which parents are liable to fall because of modern educational conditions.

The errors of our educational system have much to do with the physical degeneracy of the race. The pressure to which our children are subjected in the public schools has the result of sapping their vitality, retarding their physical growth, undermining their nervous systems and preparing the way for a debilitated, incompetent manhood or a neurasthenic, unwomanly womanhood. Our public school system, as an established institution, is simply a reflection of the perverted civilization which it represents.

I am pleased to admit that in recent years there has been a growing tendency to introduce a measure of physical education into the school system, and this is excellent so far as it goes. Unfortunately, however, there is no lessening of the mental pressure which is making wrecks of the children everywhere. They are confined too long in the school room and then so crowded with the demands of their lessons that they have to spend much of the balance of the time at home in study.

Besides, it is a question if a school education is of any real value, anyway, apart from the essentials of reading, writing and arithmetic, and perhaps a little history and geography. They do not learn to apply the knowledge which they gain, and would not have the time to apply it if they wished. The most important factors in the development of character are self-reliance, initiative, originality and judgment, the first two of these involving the latter; yet in our school system there not only is no opportunity of cultivating these qualities, but every effort is made to stifle them.

As soon as a child begins to observe and think it begins to ask questions. This is the natural method of education. The *child* imitates the lesson. His questions are the drawing out of his own mind. He is being *"educered"*—educated. Never grow angry at his childish questions, and above all be perfectly honest with him. Tell him the truth. Tell him when you don't know. Tell him when you merely guess at the answer. Cultivate this questioning habit, but if it descends to questions about other people's lives, persons and affairs that do not concern him, quietly refuse to answer him and tell him why.

Be very careful, however, to discern between paltry and unnecessary, really impertinent and improper questions, and those that are reasonable and natural to a child's mind. What may appear small to you, may be of the utmost importance to him. And above all never laugh at his seriousness or earnestness.

For every command or request give the reason. Appeal to his intelligence. Teach him that you expect him to ask "Why?" to whatever you require of him that is new or strange or different. Begin now, too, to teach him the why of things he has done in the past—why he eats, why he drinks, why he sleeps, why he wears clothes out-of-doors, why he is allowed to take off his clothes indoors, why you give him sun and air and water baths. Cultivate this "Why?" habit, for thus and thus only will you make of him a keenly observant and intelligent human being.

If your children go to school or associate with other children, with the natural freedom that should always be accorded to childhood, the question is sure to arise as to whether they should be allowed to fight. Indeed I have been asked that question again and again, by most anxious and agitated parents. My reply is promptly and unhesitatingly, Yes! by all means. I would certainly teach both boys and girls to box, to fence, to wrestle, to swim, and if occasion arose where a boy had to defend himself or his sister, he should know how to do it effectively and without passion or anger. However the man may regard the doctrine of non-resistance for himself his child should not be handicapped with it in the mere animal stage of his existence. The boy who can protect himself with vigor wins a respect not attainable otherwise, and elsewhere in this work full instructions for the training of boys and girls in boxing are given. (See *Boxing,* in Volume II.)

At the same time I would teach the necessity of self-control. But I would not warn a boy of mine to exercise self-control if he saw a bully abusing a younger boy, or, as he grew older, if he saw an inhuman man flogging a sick or wounded horse, illtreating a dog, or abusing or striking a woman or child.

Hygiene and Sex Education in Children.—Among the most important things that every growing child should be taught are: 1. The importance and necessity for regular exercise of the functions of excretion. The bladder and bowels should be emptied regularly and no retention of either urine or feces allowed through any false shame or sense of modesty. Both boys and girls need this teaching. A false sense of shame may injure a girl or boy *for life,* as occasionally conditions develop under volitional suppression that science and ordinary knowledge seem unable to cope with. 2. Cleanliness of these parts should be especially emphasized. Often-times uncleanliness leads to irritation, which in turn leads to handling of the parts and subsequent disaster. And it should be known and understood by the parent that an irritation of the anus or rectum often causes, because of their intimate nervous relation, a corresponding irritation of the genital organs. 3. The generative purpose of the sexual organs and the laws that govern the begetting of offspring, hence the sanctity of the organs. 4. That any handling of these organs except for these natural purposes is likely to lead to the formation of unnatural, demoralizing, and debasing habits, which will wreck the body, shatter the mind and pervert the soul. 5. That little boys should always be chivalrous to little girls and women because of the very fact that motherhood is their especial function. By this I do not mean the foolish, frivolous sentimentality of the youth who is full of pretty manners toward a girl, who gallantly raises his hat, never precedes her, always takes the proper side of her when walking through the street, talks sweetly and prettily to her, flatters her vanity and buys candy and peanuts for her, and yet would unhesitatingly seduce her if he dare. By no means! This is false, not true chivalry and respect. There is a real respect which can early be inculcated into a little boy's mind, and the sooner the better, but it can never be done by subterfuge, by deceit, by shuffling and lying on the question of sex. 6. That the chief use of the sexual function is the procreation of the race and that an immature father or mother cannot bring forth healthy and vigorous offspring. Hence only the physically mature should marry, and only the vigorous and healthy should have children, as it is self-evidently a crime to give weak and sickly or diseased bodies to children that have no say in the matter. For these and other reasons society also has determined that only when a man and a woman marry shall they be allowed to have sexual relationship and thus become the parents of children; therefore, all such intercourse by unmarried persons is regarded as legally punishable as well as morally wrong. These things can clearly be impressed upon the young child's mind.

It ought to be no more unusual nor difficult to teach youth of both sexes "sexology," than to teach them the use of the heart, the eye, or any other part of the body. That it is so, only emphasizes how far humanity has gone into the pit.

"Childish modesty" has long been construed a synonym for a pure mind; instead of only too often being the veil to cover thoughts that shrink from the light of confession or open expression—thoughts that would never find lodgment in the mind of either sex, were the sacredness, and the divine intention in every function of the human body, admitted by the *total elimination* of implied impurity.

Why should a few years more of growth make such an appalling difference in the child's attitude toward the unclothed masculine form; and change the sex-relation from innocency to an implied menace? The answer is obvious: Simply because the *suggestive secrecy* of the adult inevitably breeds impurity.

Education, whether at home or at school, should emphasize four things, namely, observation, reflection, correlation and review. Teach a child to do these four things and he will become educated in spite of all obstacles that may come in his pathway. Observation is the perception of facts. If observation is constantly alert it sees thousands of things that would otherwise be passed by and it sees them so often that it remembers them and thus disciplines memory. If reflection is then aroused and one thinks, that is, ponders over what he has observed, he is naturally led to the law of correlation, and even a child can be made to see the close relation that exists between ocean, sun, fog or cloud, rain, nourishment of crops, food, personal satisfaction of appetite, and health. Without the ocean and sun there could be no fog or cloud; no fog no rain; no rain no crops; no crops no food; no food no eating and health. Hence life itself depends upon the ocean and the sun. This conclusion is the result of observation, reflection and correlation. Once awaken in a child's mind a recognition of these correlations and really scientific education begins. The fourth principle, review, is the wise method of caution, of going over the same ground again and again, which leads to the discovery of incorrect or incomplete observation and correlation, and therefore assures the mind and keeps the knowledge one has from becoming stale and out of date.

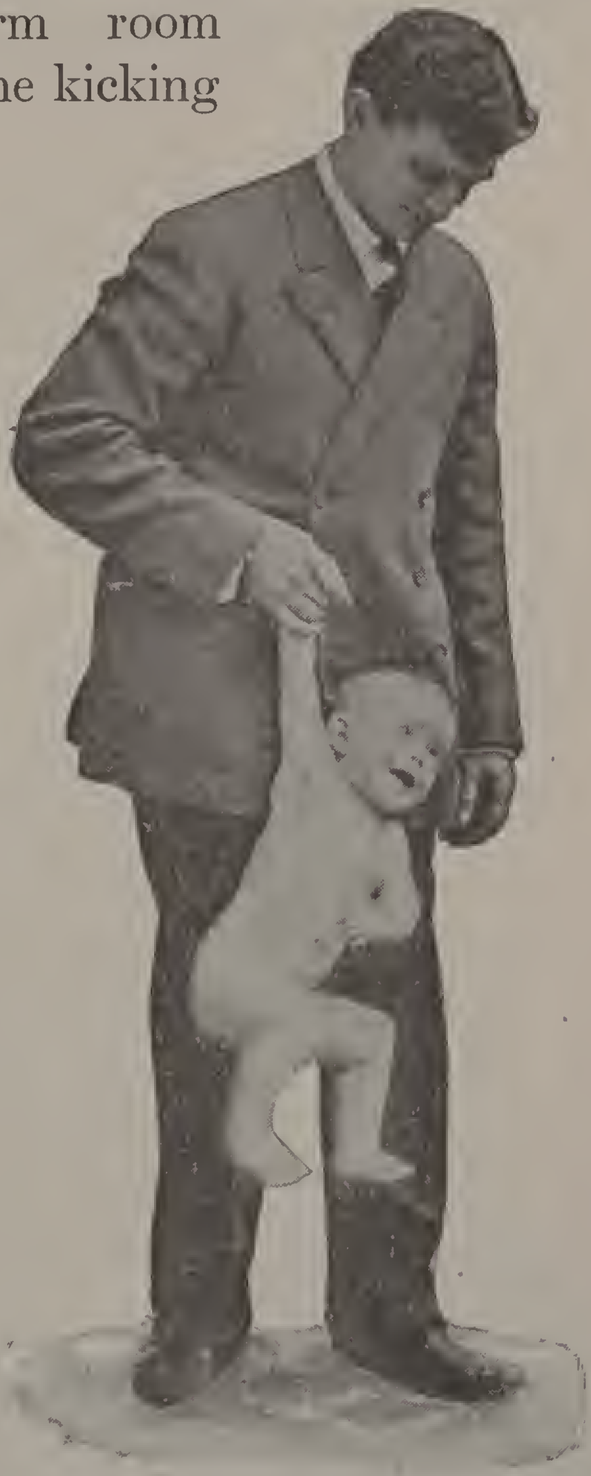
It should never be forgotten that one of the chief functions of education is to *teach us to think,* and the process here outlined has been demonstrated again and again as being most effective. It may unhesitatingly be affirmed that very few persons think. By thoughts I mean thoughts of their own. They all think they think, but in reality they are merely turning over in their minds thoughts that have been given them by others. The people who think in every age and in every walk of life are the iconoclasts, the revolutionists, the rebels. They see things from a new standpoint because they have observed, reflected, co-ordinated and thought for themselves.

Exercise in Infancy.—There is no quesition that exercise is an important factor not only in the physical growth and development of the infant, but in the training of its mind as well, for it develops its brain cells through learning the use of its muscles. Even before birth the fetus is very active, though many of its movements are not discerned because of the cushion of amniotic fluid. For the most part, however, the exercise of the child is voluntary, and it will not need much attention from the

At about ten months the average baby will be ready to stand and try to walk with assistance in balancing. Standing or walking, while simple enough in later life, means good training and exercise for the new and growing muscles.

parents if its clothing is sufficiently loose to give it perfect freedom of movement. This condition, however, is important. Soon the little body may be greatly strengthened by little play-stunts which the parents may put it through. Throwing the baby up, and other exciting movements should be avoided as detrimental to the nervous system.

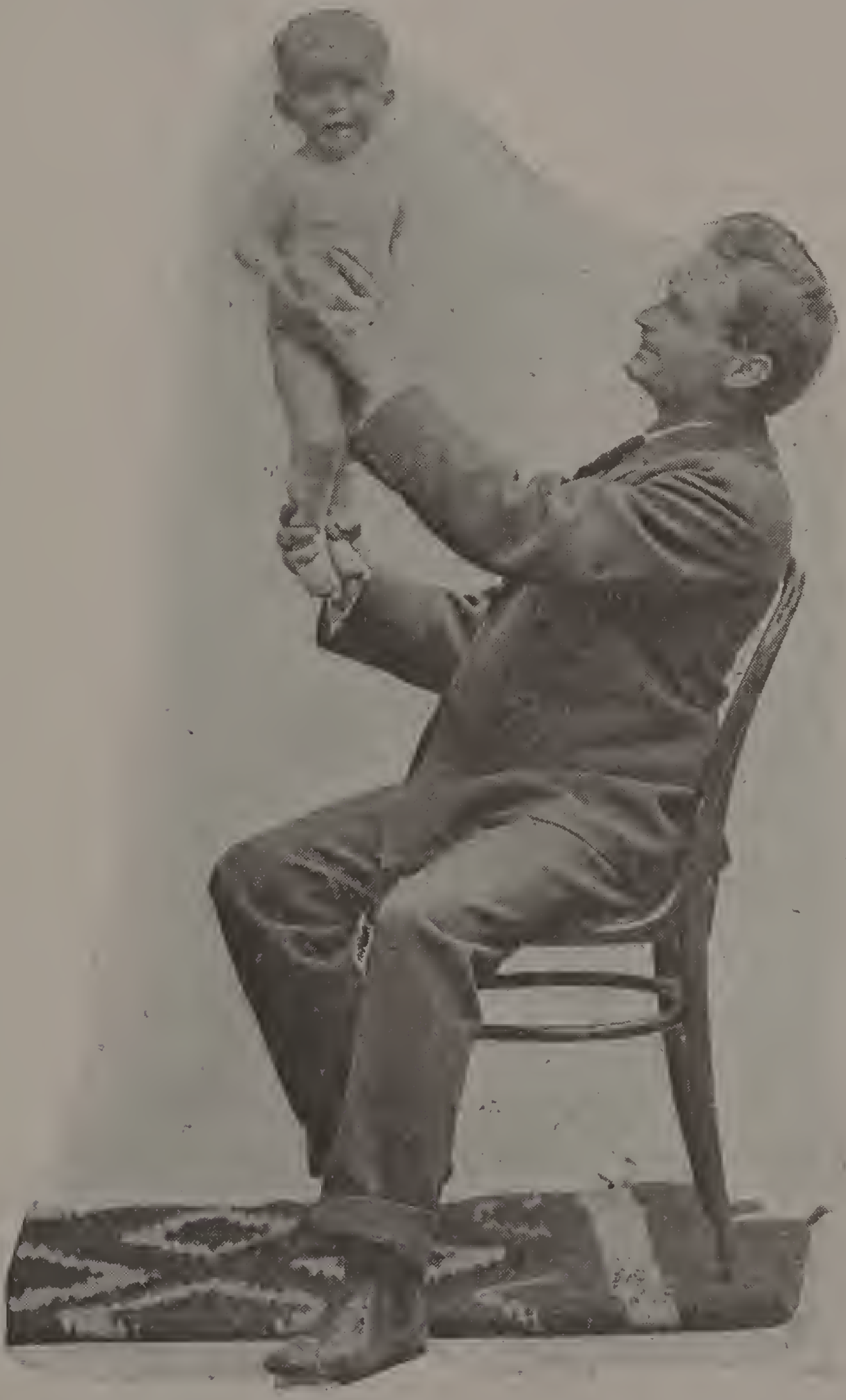
From the very beginning it is well to rub the little body, and especially the back, after each bath, the rubbing to be very gentle at first, and more vigorous later. After a month or two, air baths in a fairly warm room will be of great advantage, the little one kicking and throwing his arms about with joy as he lies in perfect freedom from restraint. Soon he can be placed face down, in which case he will secure more vigorous exercise by trying to raise his head and push up with his arms. Before long he will learn to roll over, and will strive to creep. He may be pulled to sitting position by his arms and lowered again, and a little later lifted by both arms. He may be lifted by right arm and left leg, then by left arm and right leg. Note that some vigorous infants can do many strenuous stunts, but that we naturally speak here of the ordinary case, in which it is unwise to force the child too much. By the age of six or eight months, it is probable that the child will rise from its back to a sitting position if his feet are held down. Rolling the child on a bed will be found splendid exercise as well as great sport for the youngster.



A more energetic exercise, not to be used in the very beginning, but to be taken up gradually after three or four months, depending somewhat upon the weight of the infant. With a very fat child, be more careful. This strengthens the ligaments particularly.

Perfect freedom for active play is the great essential in the way of exercise for the baby, always with the least possible clothing. In creeping, hitching, learning to walk and to run and playing with simple toys, the average child will secure ample exercise, but this may be supplemented by wrestling with his father and by any special exercises that he may enjoy.

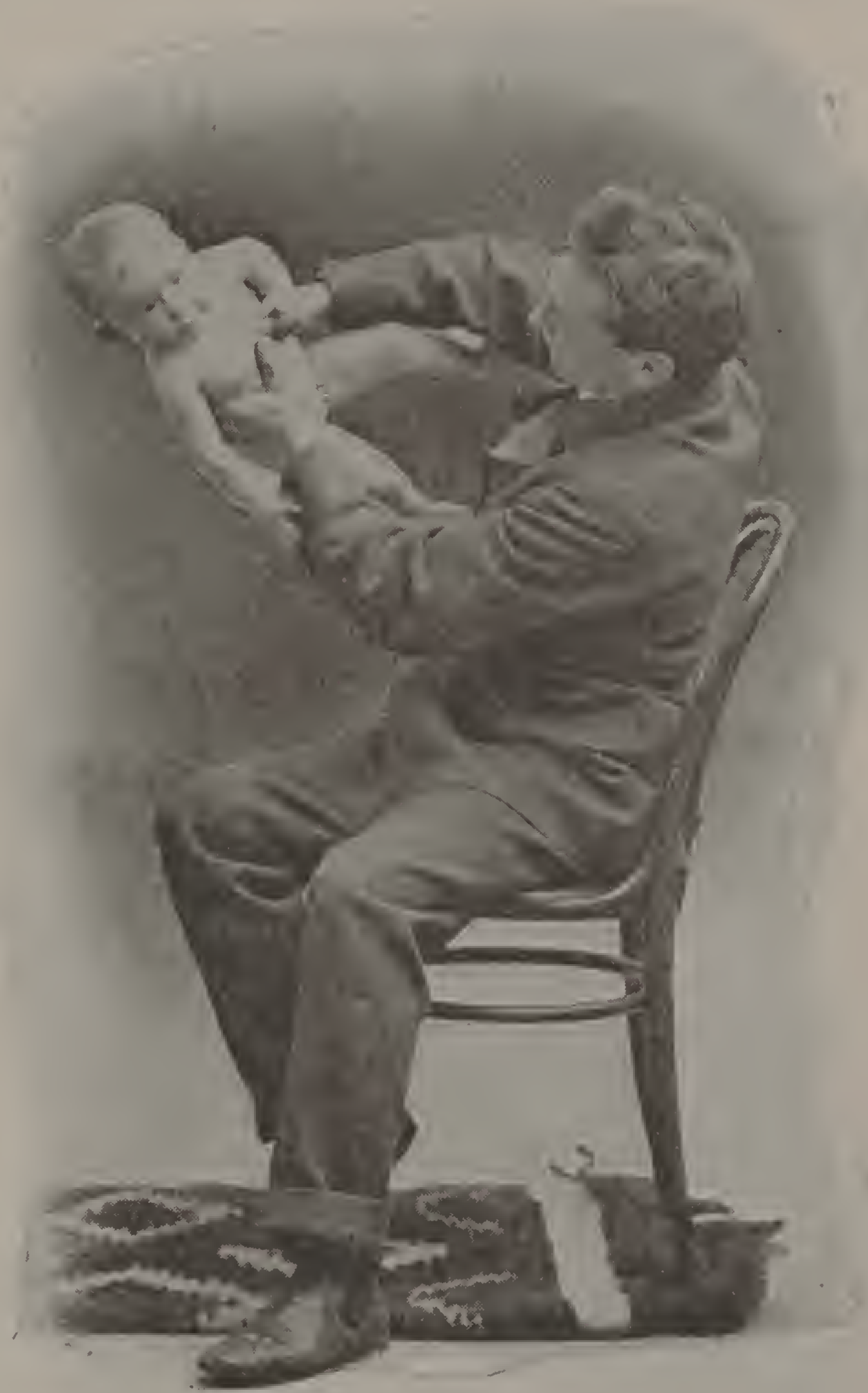
In the way of *toys,* it may be said that elaborate and costly contrivances usually do not please as well as the very simplest of things. The young baby will probably enjoy an old shoe more than a pretty rattle that cost money, and later will probably find far more pleasure in a box of blocks than in a toy automobile that goes after winding, and which gets out of order on the third attempt.



An interesting play-exercise for the infant of ten months or over. The child can be taught to hold the body firm and rigid, standing on one's hand.

From two to five years of age much more may be done in the way of intelligent direction in the matter of play and exercise than before, and the child can be encouraged in certain directions with better success. At this age children will readily take to definite games of a simple kind, and especially those which involve running about. If the parents are wise enough to realize the benefit of the exercise to themselves as well as to the children, they can join with them in these sports. There is no time of life when a child will more enjoy such games as tag, and puss in the corner, although these are often not performed until a later period of childhood.

Between two and five years of age the child will derive great pleasure as well as strength and benefit through doing "stunts" in combination with his parents. For instance, he will hold his body straight and rigid while his father, one hand grasping the ankles, and the other hand placed back of the neck, holds him high overhead. He will stand rigid while balanced on his father's hands. Locking his legs around his father's waist, while held in the latter's arms and facing him, he will learn to lower his upper body backward and then rise to the erect position, after the manner of the "strong man" feat known as the Roman Column. It is an ideal exercise for the muscles of the abdomen. The child at this age will hold to a stick while his parent pushes it high overhead, he will learn to jump from five or six steps down a stairway into his father's arms, and to turn rolling somersaults on the ground. These

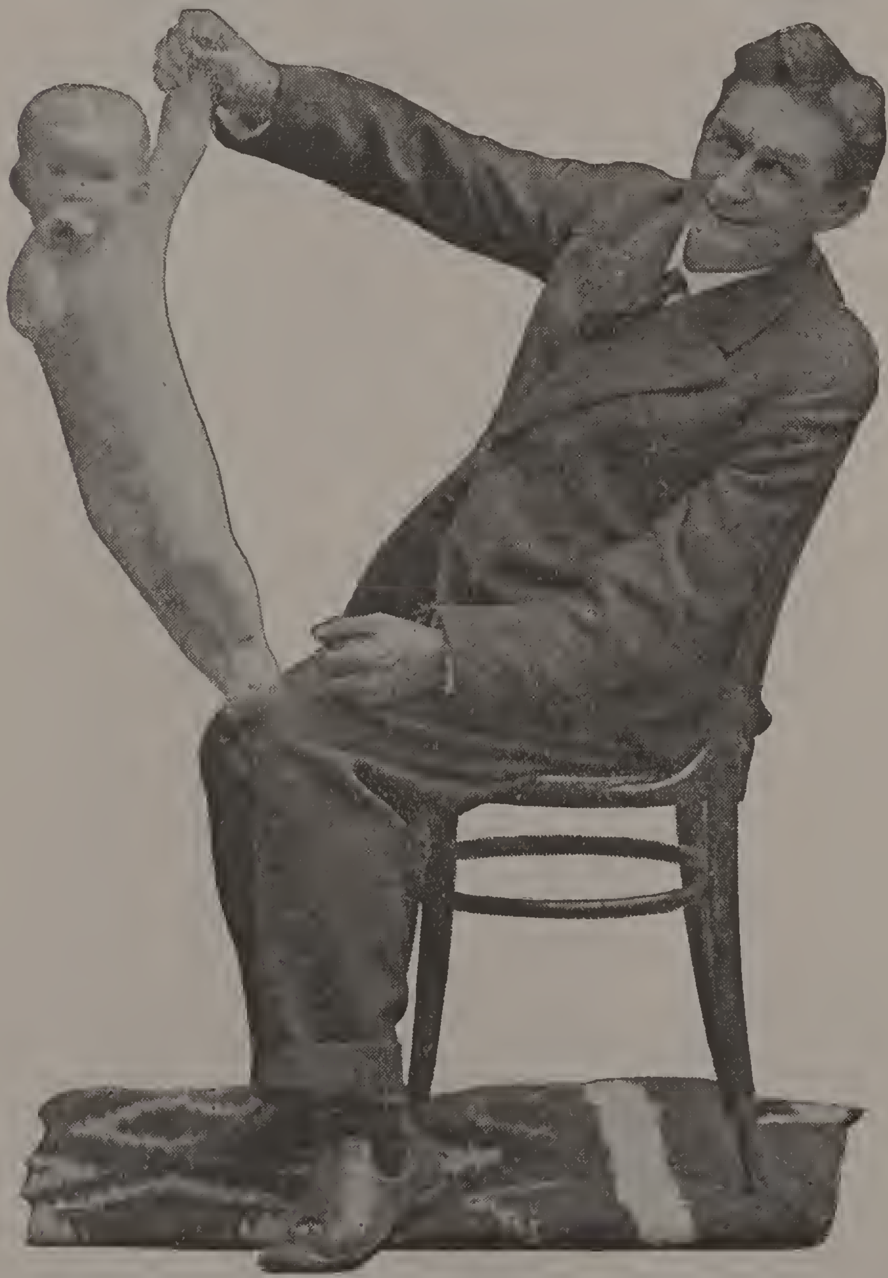


A form of play exercise suitable for a young baby. Holding securely with both hands around the body, turn from side to side, as shown, and also tip forward and backward, but not too far. This will strengthen the back and also the muscles of the sides, chest and abdomen.

and similar exercises are excellent at this period; swinging high over head, throwing up and catching and other juggling tricks should be avoided. They are exciting, and while showing how clever Papa is, have very little effect in developing the actual strength and body of the youngster. Do not attempt anything risky.

Very simple exercises of the usual kind may be commenced at this age if desired, but they are really better postponed to a later period. Everything at this time should be in the nature of outdoor play and games, and such combination exercises as we have referred to, in which the parent takes a part.

The physiological requirements of exercise for children are sufficiently distinct from those of older persons to deserve special mention, even though brief. Varied activity should be the chief principle of exercise for children rather than endurance or tests of strength. Games and exercises calling for quickness and suppleness may be especially recommended, but without that persistence and continuance which demand endurance. The healthy child is on the go continually and develops a tirelessness which is peculiar to childhood and youth, and so he should not have any such repetition or pro-



A simple exercise, consisting of partial support of the baby by one arm, while she bears some of her own weight upon her feet.

longation of any movement as to cause strain. Those who are well along in years, even in advanced years, are better fitted for activities calling for this endurance. Weston, the pedestrian, for instance, has made better records in transcontinental walks in his old age than he did in his youth fifty years before. But childhood is so largely instinctive that it protects itself against any injury through over-exertion. The mature athlete, under pressure of competition, will sometimes force himself beyond those limits at which his exercise may prove beneficial, but the child, when his efforts have gone beyond the limits of comfort and pleasure, will stop. He follows his feelings and his sense of joy, and thereby avoids excessive fatigue, even though exercising, that is to say, playing, actively all day.

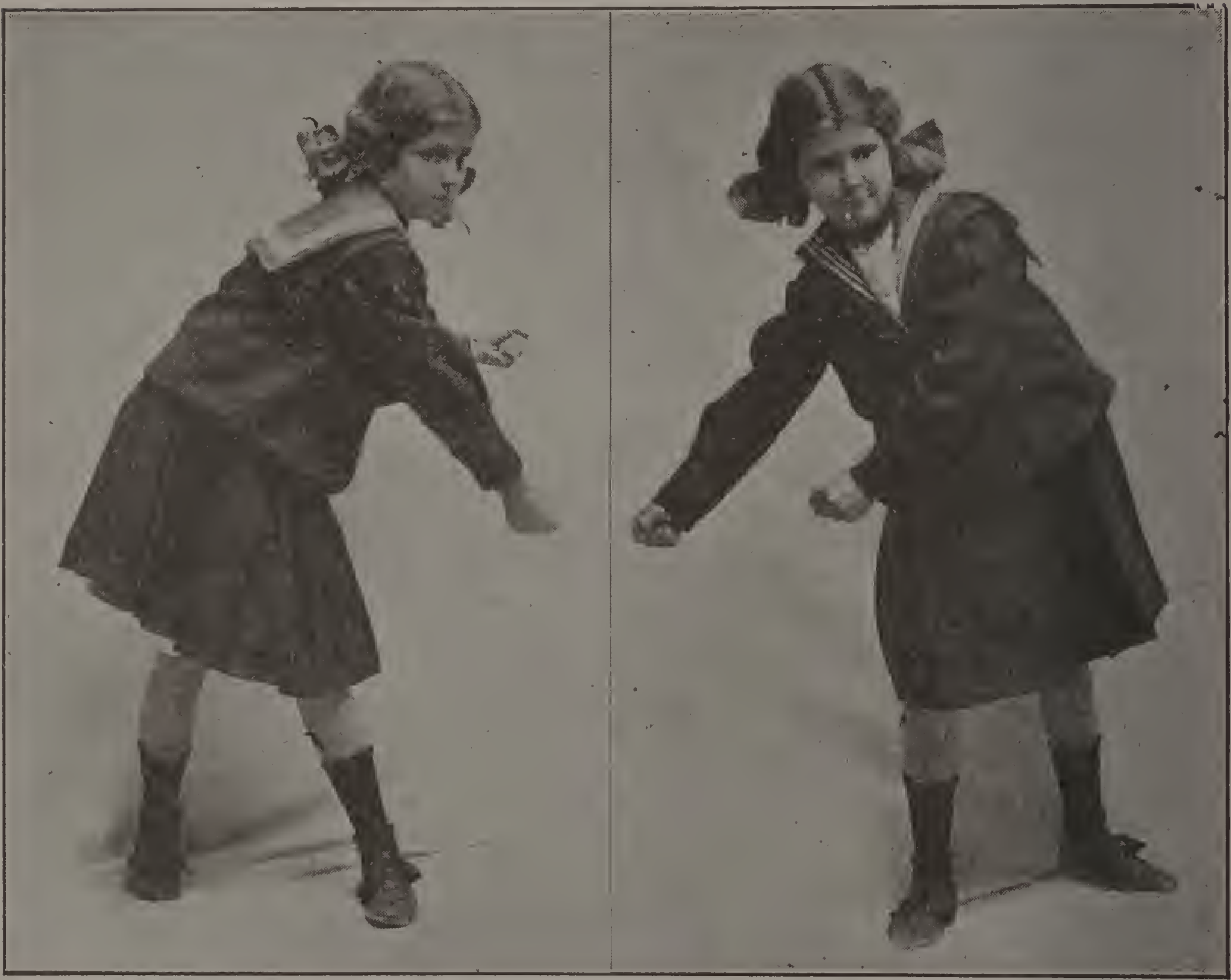
From six to ten years of age the question of experience and activity begins to have, if possible, an even more important bearing than before upon the future health and development of the individual. Favorable habits and conditions at this time will go far toward establishing the foundation for a splendid manhood or womanhood, while confinement and lack of activity together with general neglect will place a handicap upon the growing body that it may never be able to overcome in future years.

In regard to special movements for muscular development at this age, I would say that, in a general way, the exercises given in Volume II for adults will have the same results when taken by children, except that they need not be taken so many times, and may be modified as much as desired. In many cases it will be found interesting if the entire family goes through the same general exercises at a specified time

Gymnasiums and nurseries should be outdoors, whenever possible. This is a simple but splendid apparatus to have in your own yard.

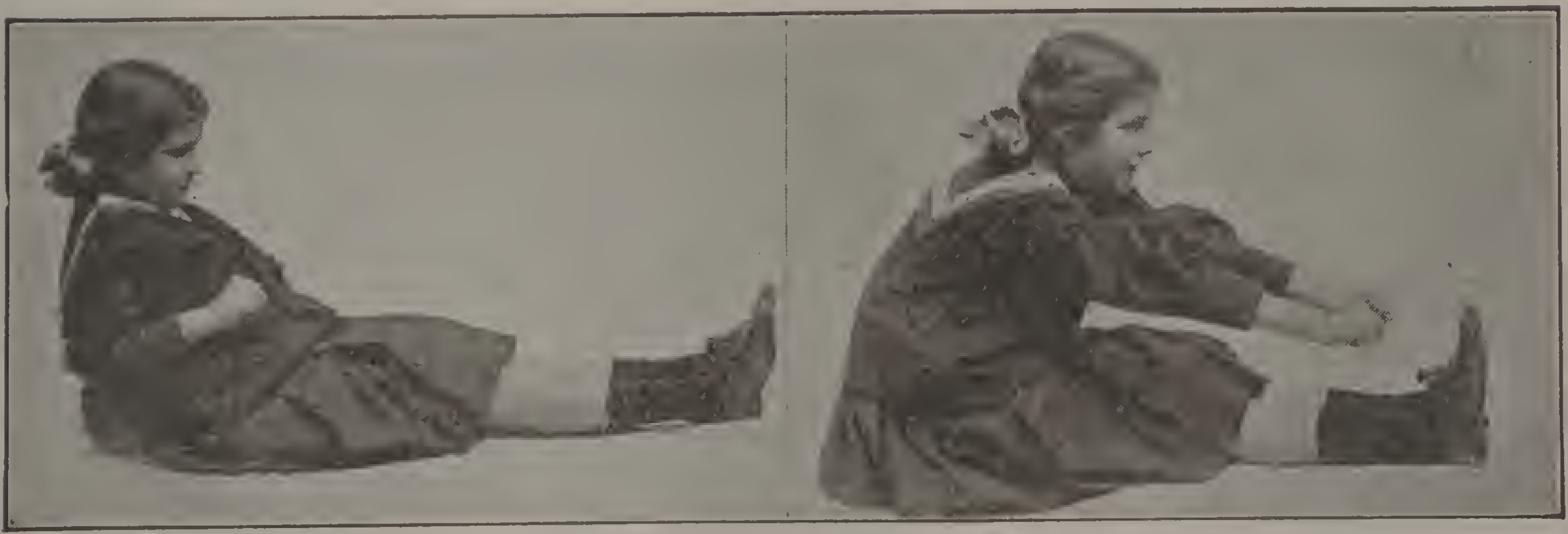
each day, and it is altogether likely that the youngsters will attach greater importance to their efforts if "Papa" and "Mama" are doing the same thing. For this reason I am not attempting to outline any comprehensive course of exercises especially for boys and girls, and am laying the greatest emphasis upon all kinds of active games and stunts which will accomplish the best physical development. All kinds of exercises indulged in by children should be taken in the play spirit, and unless they are taken in this spirit, indeed, they will soon become distasteful and are likely to be neglected.

Many children, however, are characterized by special



Exercise Number 1.—This movement is perhaps more clearly described by stating that you should imagine that you are in the act of mowing. Assume position as shown in figure to the right, and swing the arms around as though you were handling a scythe and mowing the grass down before you. Swing the arms as far as possible without moving the feet. Return to former position and repeat until there is a distinct feeling of fatigue.

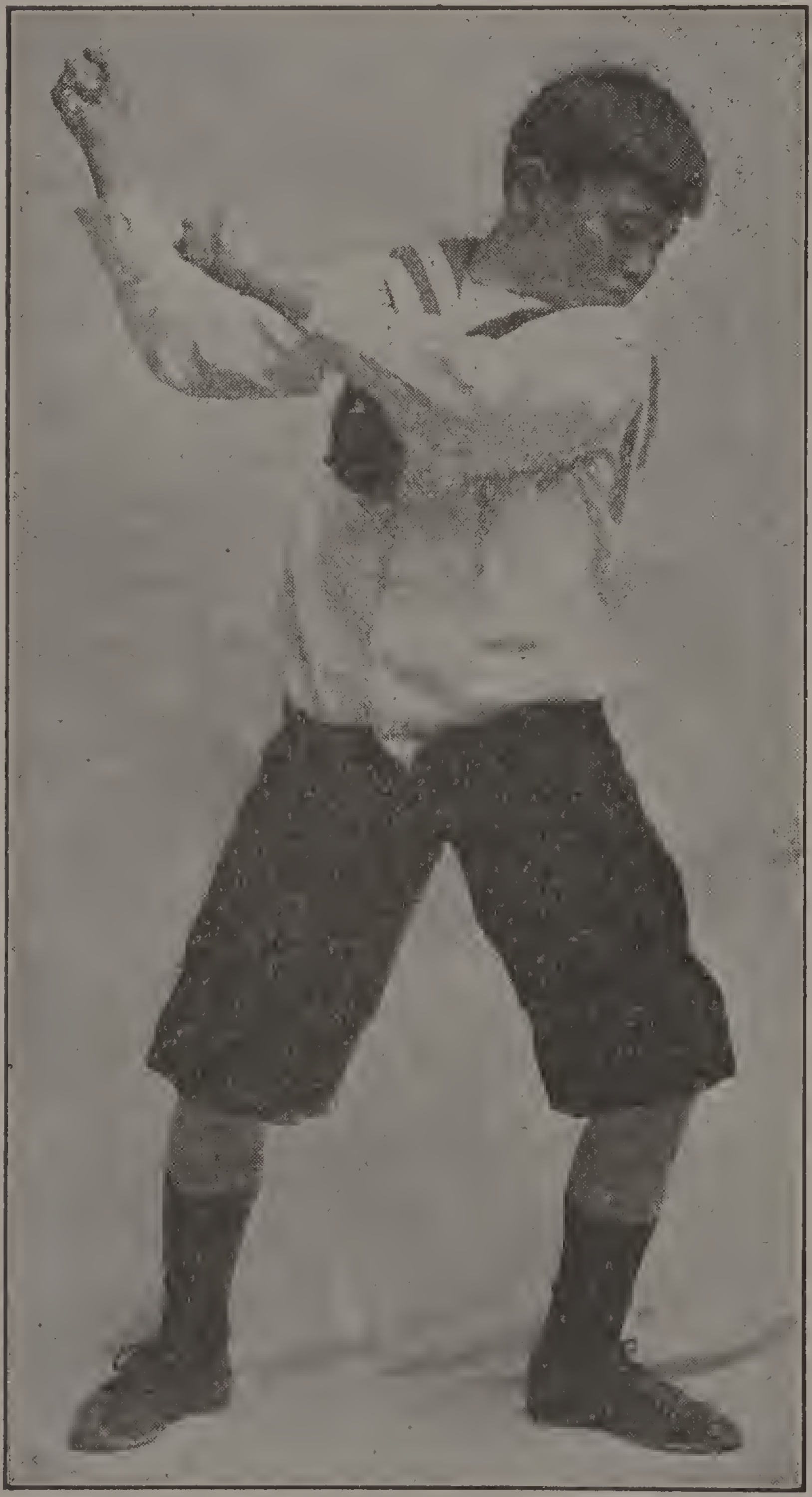
weaknesses or defects which should be overcome, and in all such cases the parents should see that special exercises for the purpose of overcoming these are taken daily and conscientiously. In some cases it is the tendency to round shoulders due largely to improper positions at the desk in the schoolroom, though sometimes to a naturally weak back. In some cases there is a tendency to bow-legs, knock-knees, "chicken-breast" or "pigeon-breast," all of which can be overcome very readily in children by means of proper exercises. These will be found in another section of this work (Volume II) devoted to the curative and corrective aspects of exercise. Even these should be made as attractive as possible, and if the child can be made to realize his defects, and to understand that these movements will make him strong and symmetrical and physically beautiful, instead of weak and deformed, then he will take them up with avidity. Sometimes the child shows a very large head on a very tiny neck, sometimes it is weak hands, or something else, and sometimes it is an unusual and peculiar weakness of the entire body, due to imperfect nutrition in infancy or before birth, or to some other cause. But in any case special training is necessary. As I have said, in the average case it is generally sufficient to turn the child out-of-doors and encourage all kinds of active games from one end of the day to another, and this will result in the very best development and health of the youngster, but in special cases,



Exercise Number 2.—This exercise, as can be clearly seen in the illustration, consists of movements made when rowing. Seat yourself on the floor or cushion as shown in the illustration to the right, bend backward as far as possible with the heels coming from the floor and pull vigorously at the same time. Continue exercise as long as you can.

where the little one is below the average in strength right from birth, it is necessary to do more than this The boy or girl of low vitality, who therefore specially needs outdoor life and physical training, is just the kind that is most likely to stay in the house and read books, or to work extra hard for the sake of high marks in school. Parents should be on the lookout for such tendencies. One book thoroughly digested by a healthy and normal mind, in a vigorous mature body, is worth more than a hundred books imperfectly assimilated by a neurasthenic and consequently more or less morbid mind in childhood or early youth.

Play! Play! Play! It is the one supreme demand of childhood. It means physical activity, mental development and joy all rolled into one. It is not merely play for the sake of the play and the pleasure, but for the sake of its biologic value in the growth and perfect development of the complete man or woman that is to be. Plenty of sleep, pure, good food and open-air play—these are the prime and indispensable essentials of the growing human. Fulfill these requirements perfectly, and there is little else that matters.



Exercise Number 3.—There are few exercises better than that of chopping wood. The illustration herein shows one part of the movement required in this splendid exercise. Imagine you have an axe in your hands and that you are raising the axe high above the head in order to bring it down with greater force.

The play-stunts and exercises suggested here

PLAY EXERCISES FOR BOYS AND GIRLS.

No. 1. A stick twisting contest for testing the grip. Take hold of a broomstick high over head, in the manner illustrated, then slowly bring it down between the two bodies to the hips, each keeping a tight grip, and trying to make it turn loose in the hands of the other. Put your thought in your hands, and grip tightly.

No. 2. An interesting exercise and test of strength. Stand with your back to the wall, fingers clasped behind the head, and elbows held out forward. Then let your friends try to push the elbows back to the wall. You will be surprised to find out how much resistance you can offer in this way, showing the power of the muscles across the upper chest, which are used in bringing the arms forward. Probably not one of your friends will succeed in pushing your elbows back to the wall by a steady push.

No. 3. This is another exercise in which you will probably resist successfully all of the efforts of your friends. Place one hand on the top of your head, and then challenge any one to lift it or push it up with one hand, as in the photograph. It shows that the pulling down of the hand, or the power of pulling up the body, is greater than the power to push up, in the ordinary case.

No. 4. An interesting exercise showing strength of the back. Lie down on your back on the floor, and then, while you hold the entire body very stiff and rigid, let your friend lift you by the back of the neck, as shown in the illustration, and stand you on your feet as he would do with a wooden post. Take turns.

No. 5. A good feat of strength to show your friends, for it looks harder than it is. At the same time, it requires strength. With your friend standing on one side, place your hands on his hips, taking hold of his belt, if he has one. Meanwhile he places his hands well back on your wrists, or halfway up your forearms, if you can't lift him with hands on wrist. Then lift him up from the one side and set him down on the other, and then back again, several times, just to show how easy it is. The secret of it is that he leans back and puts most of his weight on his hands, on your wrists, which makes it easier.

No. 6. This is what may be called an attempt of an impossible feat. Standing three or four feet apart, clasp hands above the head, and then keeping the line of the body straight, and without bending the arms, or bending them forward at the shoulders, pull straight down. It is vigorous exercise, but as long as you keep straight it is impossible to pull the arms down, each keeping the other up.

just simply being big and strong. Merely to speak of this in many cases is sufficient to deter the boy from using cigarettes and adopting other debilitating habits. And the girl also desires to be healthy and strong and beautiful, not only for the sake of feeling fine and being beautiful, but for the sake of thereby winning the admiration and love of the other sex, and especially because it will make her a better mother. As a rule, it is scarcely necessary to do more than mention or explain these things to the girl, and she will enter into health and strength building pastimes with renewed enthusiasm. It may seem from the many childless marriages of to-day that women are losing the mother instinct, but in the growing girl, the girl who loves and cares for her dolls almost as tenderly as the mother cares for her babes, the mother instinct is very powerful and may be used as an incentive in this direction. But if for no other reason, she will strive for the most perfect physical development and health for the sake of beauty of body, figure and face just as soon as she understands the relation of beauty to strength and physical well-being.

Exercises for Older Children.—Every one knows that activity is the essence of childhood. The play instinct in the child is one of the most powerful of all human forces, not only making for the physical health and development of

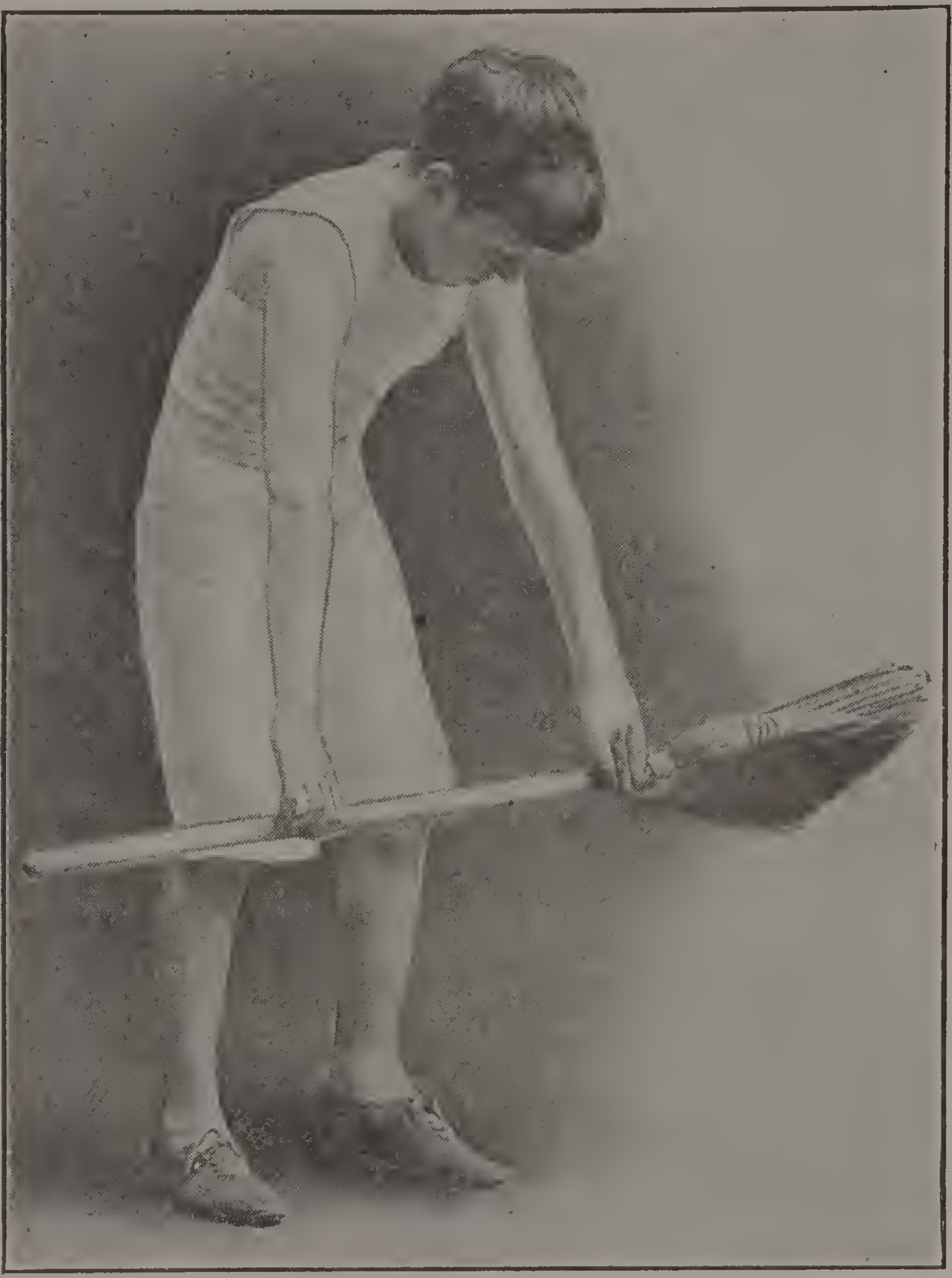
Boys in athletics—final heat of a fifty-yards dash. Photo taken at the finish.

the little man, but for the education of his mind as well. Give the children plenty of opportunity for free open air play, and they will usually indulge in so much spontaneous, natural exercise that any discussion of physical training for children will seem almost superfluous.

However, there are so many artificial influences surrounding the average modern civilized home that the natural play tendencies of children are greatly interfered with, and especially in the cities. As a place for bringing up children the city is an abomination. It leads to precocity, extravagant and unwholesome tastes, mentally as well as physically, false views of life, perverted conceptions of Nature, arrogant indifference or contempt for one's fellows, eye-strain and late hours, excitement, nervous tension and ultimately nervous ex-

Photograph, Paul Thompson.

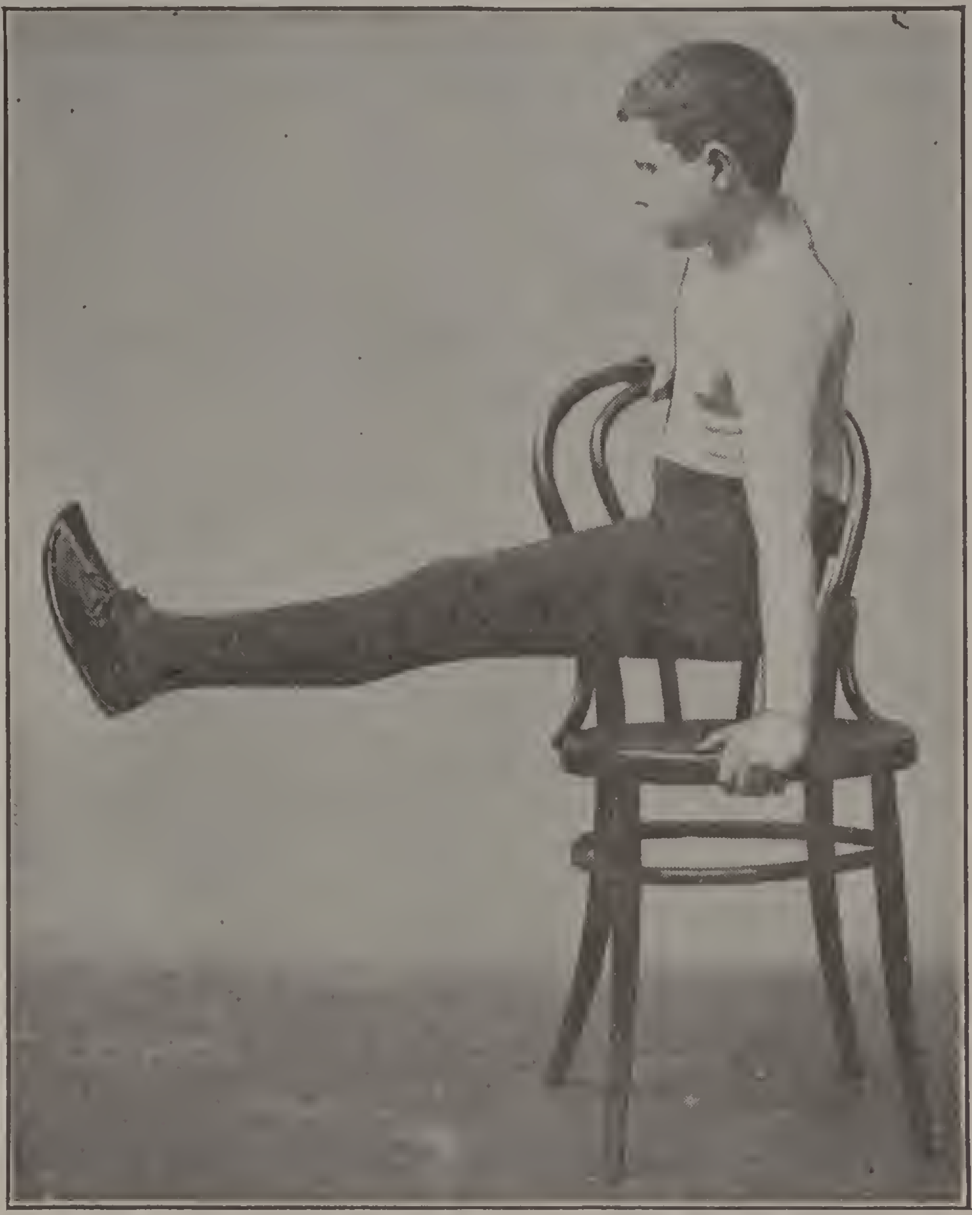
Girls, properly trained, become as enthusiastic and skillful in track and field sports as their brothers.



A little feat requiring agility. Holding a broom stick in front of you, as shown, jump up and over it without letting go. Then, if possible, jump back over to first position.

haustion. Unfortunately, the small towns and country districts show a tendency to adopt so far as possible the habit of late hours, the amusements, unwholesome table fare and other unfavorable conditions of the city, and we must admit with regret that the mortality rate and the general standards of health as well are not much better in many country localities than in the cities. In view of these various tendencies, the apparent perversions of civilization, we should take special pains to see that our children have plenty of active, open-air play, and that they develop into rugged manhood and robust womanhood.

The housing of children is a crime. They should really spend most of their time out-of-doors, both winter and summer, in sunshine and in storm, in the latter case having such protection in the way of rubber coats and boots as may be necessary. In the summer let them play in the rain barefooted. At night they should sleep in a room with so many open windows and so much ventilation that it is practically an "open-air" room; and in the daytime, they should be outdoors, so that the only time spent indoors should be meal time, in a dining-room also well ventilated. Unfortunately, the demands of school attendance seriously interfere with the possibili-



Sitting sideways on a chair, place one hand on the edge of the seat, the other on the back. Now, raising the body from the seat, straighten the legs and bring them up to the horizontal position shown.

ties of keeping children at play in the open air, and I would say here briefly that the conventions and methods of our modern public school system are among the most serious and potent of all influences working for the physical detriment of our children. Boards of Education have recently given some attention to the subject of physical training in the schools, but their efforts should—and eventually must—go much further than in the past.

From sixteen to twenty years of age both boys and girls may take up the work of real physical training in earnest. They may enter into all forms of athletic sport with a good will, though if they have not laid the foundation for vigorous and strenuous endeavor by an active life in their earlier childhood they should not attempt athletic competition without first undergoing a thorough course of general body building according to the special exercises and methods of training outlined in Volume II.

In short, those at this age are ready to enter into the exercises and pastimes suited to those of adult life, and a careful study of the entire discussion of exercise and physical development offered in Volume II is recommended.

CHAPTER VII.

GENERATIVE ORGANS OF THE MALE SEX.

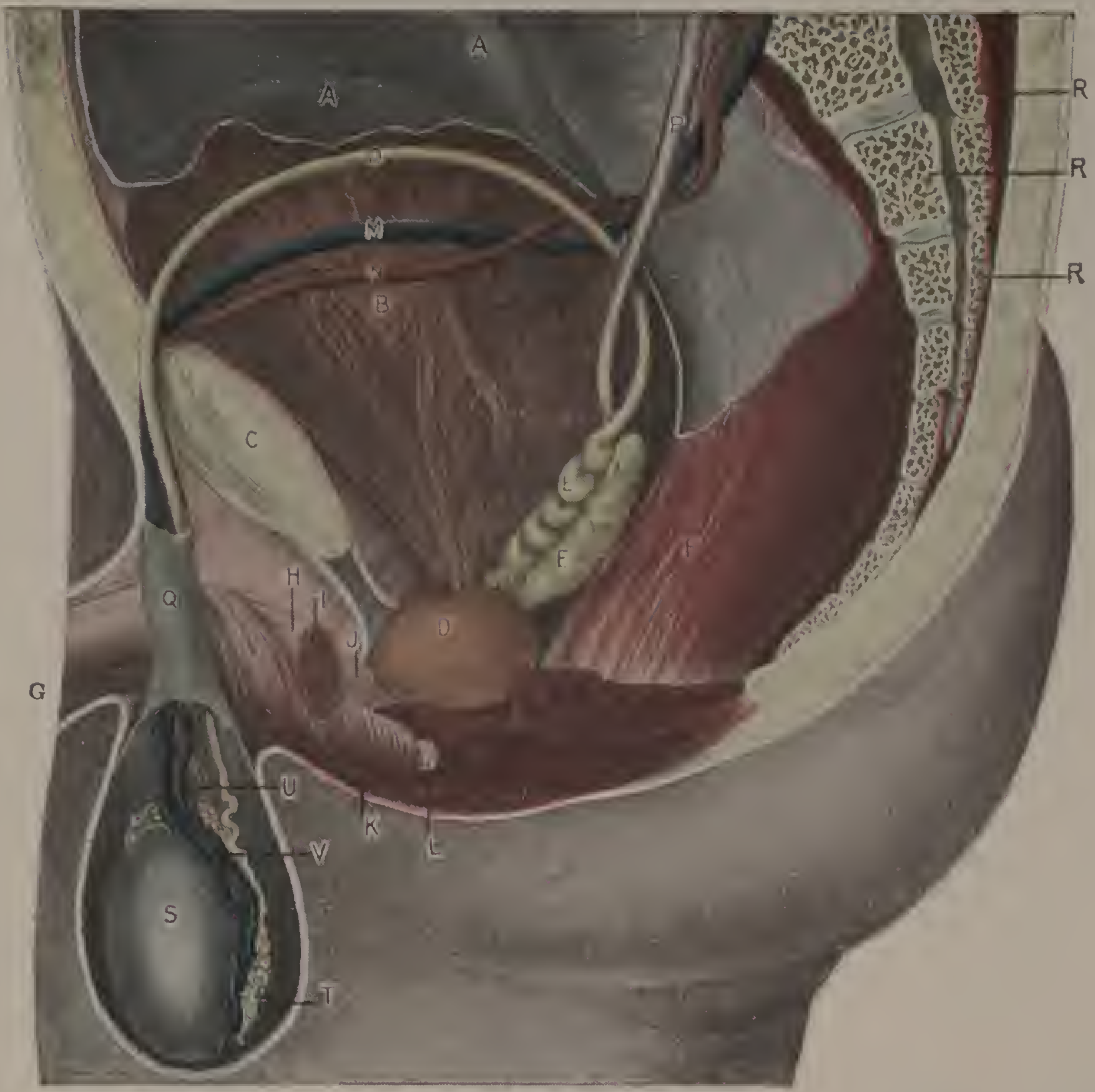
THE requirements of sexual hygiene among boys and men demand a general knowledge of the structure and physiology of the male generative system. Unlike the essential parts of the female generative system, those of the male are externally placed, but yet so well located as to be least liable to accidental injury.

THE TESTES OR TESTICLES AND SCROTUM.—The testes are the parental germ-glands in the male. During prenatal life they are contained in the abdominal cavity, but about a month before birth they pass through the inguinal rings and descend into the scrotum, an external cutaneous sac, or pouch, in which they normally remain throughout life. Virility, or in other words, reproductive vigor, and the number and quality of the spermatozoa, depend upon the condition of the testes.

The *scrotum,* though naturally well sheltered from blows and injuries, is in itself a structure well designed to offer protection to these glandular organs, which from a racial standpoint are the most important of all. The external part of the scrotum consists of two layers, the integument and the dartos. The *integument,* or skin, is very thin, of a brownish color, and generally thrown more or less into small folds. It is well provided with sebaceous follicles, the secretion of which has a peculiar odor. It has occasional crisp hairs, the roots of which are seen through the skin. The *dartos* is a thin layer of loose, reddish areolar tissue, possessing contractility. It forms the proper tunic of the scrotum, sending inward a distinct partition (septum scroti) which divides the sac into two cavities for the two testes, one on each side. The tissue of the dartos is of a meshlike nature and its contractility is slow, excited by cold and mechanical stimulation.

The external appearance of the scrotum, in fact, differs according to conditions. Under the influence of warmth, or in the case of old or debilitated men, the scrotum becomes elongated and flaccid, but if bathed in cold water, or in the

PLATE B

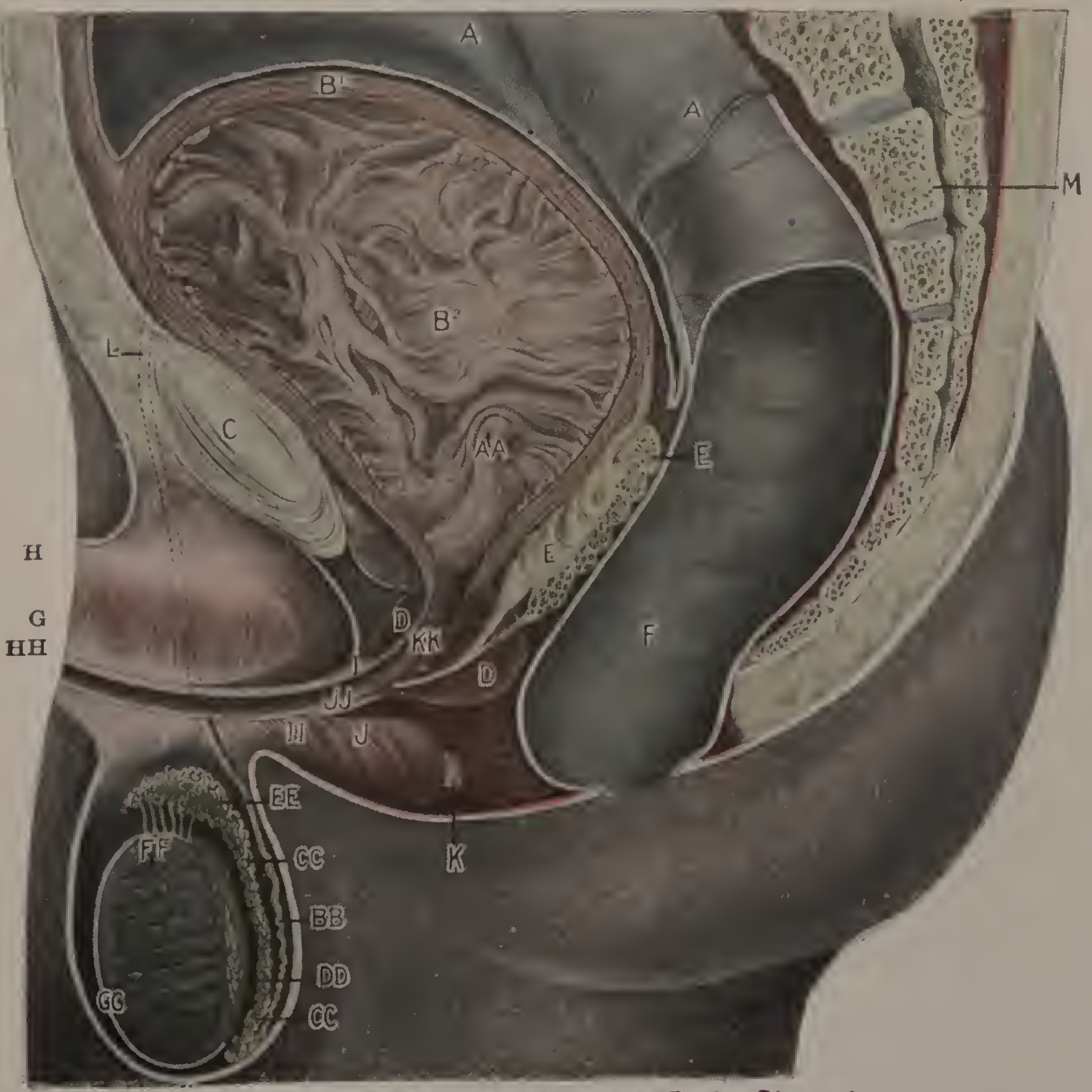


Vertical Section of Male Genital Organs

A. Peritoneum.
B. Bladder (muscular).
C. Symphysis (pubic junction of bones)
D. Prostate.
E. Seminal vesicles.
F. Rectum.
G. Penis (muscular sheath).

H. Cavernous body of penis.
I. Urethra.
J.K. Erector muscles of penis.
L. Cowper's gland.
M.N. Spermatic artery and vein.
O. Spermatic duct (Vas deferens).
P. Ureter.

Q. Spermatic cord (funiculus spermaticus).
R. Cross bone (Os Sacrum)
S. Testicle.
T. Epididymis.
U. Spermatic artery.
V. Spermatic veins (Plexus pampiniformis).



Vertical Section of Male Genital Organs (Further Dissected)

A. Peritoneum
B1. Cross section of wall of bladder.
B2. Inner lining (mucous membrane) of bladder.
C. Pubic junction (Symphysis).
D. Prostatic gland
E. Seminal vesicles.
F. Rectum
G. Cavernous body of urethra.

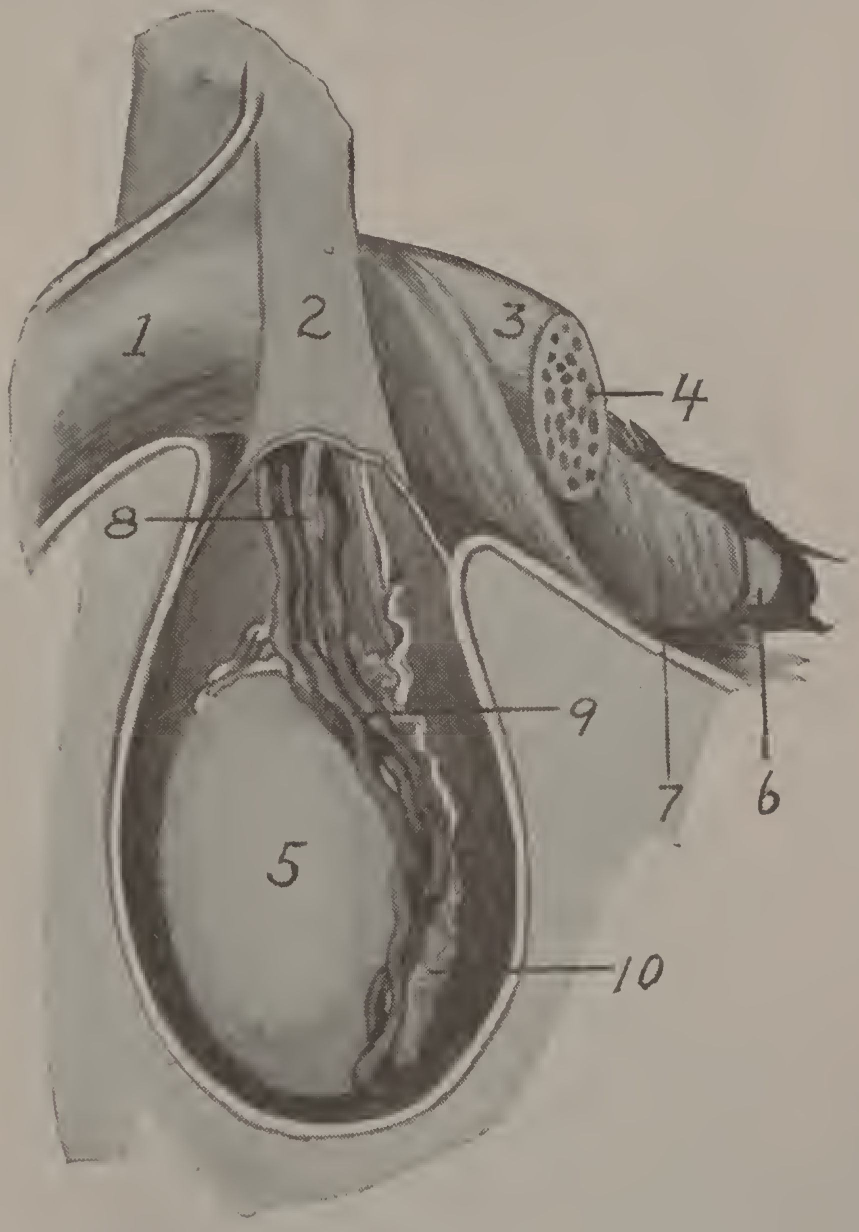
H. Cavernous body of penis.
I. Transverse ligament of penis
J. Erector muscle of penis.
K. Cowper's gland.
L. Spermatic cord (funiculus spermaticus).
M. Cross bone (Os sacrum).
AA Orifice of ureter.
BB. Spermatic duct (Vas deferens).

CC. Body of epididymis.
DD. Testicular net (Rete testis).
EE. Head of epididymis. (Globus major).
FF. Efferent ducts (Ductuli efferentes).
GG. Lobules of testicle.
HH. Urethra, external part.
JJ. Urethra, membranous part.
II. Urethra, bulbous part.
KK. Urethra, prostatic part.

young and robust, it is short, corrugated and tightly clinging. To a certain extent the appearance of the scrotum will indicate the degree of sexual vigor and the general physical condition. The skin of the scrotum is very elastic and when diseased may become much enlarged.

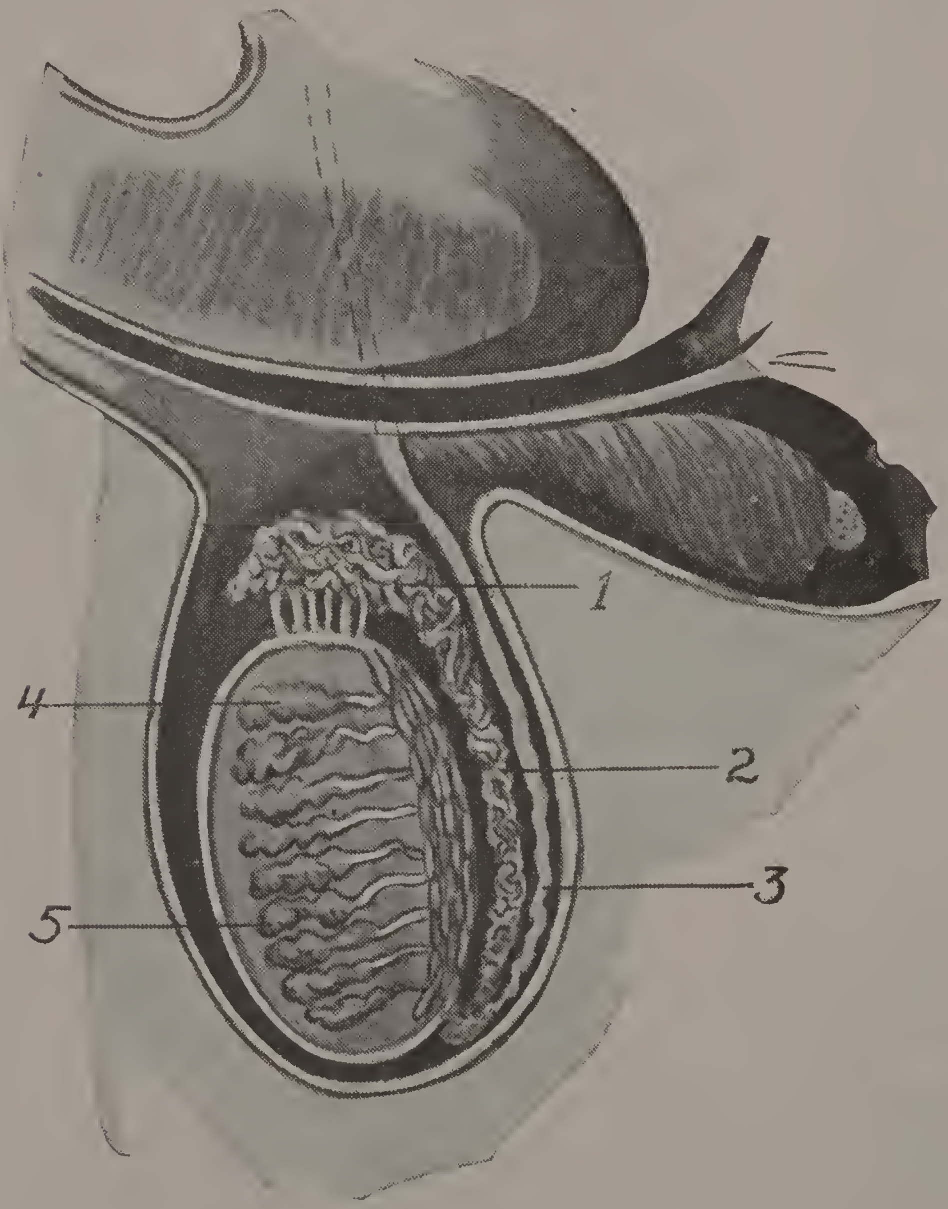
Within the dartos is a thin membrane, the *external* spermatic fascia, separated from the dartos by loose areolar tissue which allows considerable movement of the latter upon it. Within this is a muscular coat or layer, consisting of the cremaster muscle, which draws up the testis, and usually spoken of as the *cremasteric fascia.* Internally the testes are suspended in a serous membrane known as the *tunica vaginalis,* while the secreting tissue of each testis is protected by another very tough, fibrous membrane, of an opaque white color, called the *tunica albuginea.* Accordingly the testes are not easily harmed by ordinary blows and squeezes.

The method by which the testes take their place in the scrotum is an interesting one and explains to a certain extent the structure of the latter. As we have said, these glands are located in the abdominal cavity until about a month before birth, and naturally within the peritoneum, the membrane lining of this cavity.



1. Penis.
2. Spermatic cord.
3. Left cavernous body of penis.
4. Cross section of left cavernous body of penis.
5. Testicle.
6. Cowper's gland.
7. Right cavernous body of penis.
8. Spermatic artery.
9. Spermatic veins.
10. Epididymis.
11. Spermatic duct.

The peritoneum in the inguinal regions first forms a pouch, which extends down into what in the embryo is first known as the genital swellings and which later, in the male, develops into the scrotum. This pouch or extension of the peritoneum is known as the *vaginal process* of the peritoneum. With the shortening of the inguinal ligament, attached below, and the lengthening of this vaginal process, which passes down through the abdominal rings, the testes, one on each side, are drawn down into the scrotum. Sometimes this does not happen until after birth, but normally before. It is this part of the peritoneum, the vaginal process, reaching down into the scrotum, which comes to form the tunica vaginalis, wrapping itself around the testis. The size of the inguinal opening gradually decreases, giving the form of a small neck and a sac-like cavity underneath, and later the walls of the neck take on the form of fibrous cords, containing blood-vessels, nerves and the excretory duct of the testis. In other words, this comes to be the *spermatic cord,* the structure by which the testes are suspended. This cord is longer on the left side than on the right, and for this reason the left testicle is usually observed to hang lower than the right in the normal scrotum. It gives the appearance of the left side being larger than the right.



1. Head of epididymis.
2. Body of epididymis.
3. Spermatic duct.
4. Lobules of testicle.
5. Lobules of testicle.

When the inguinal canal fails properly to decrease in size, or when the tissues are weakened, there is a susceptibility to inguinal rupture, or sometimes congenital rupture. (See *Rupture,* next chapter.)

The *testes* are of a flattened, oval form, being on the average from one and a half to two inches in length, one inch in breadth and an inch and a quarter in antero-posterior diameter, while the weight varies from six drams to eight drams (one ounce), the left testicle being slightly heavier than its fellow. The size is not an accurate indication of the fertility and vigor of these glands, but their condition is important. When firm and elastic they indicate reproductive vigor, and when flabby, more or less inefficiency. A man with only one testicle may be vigorous and virile.

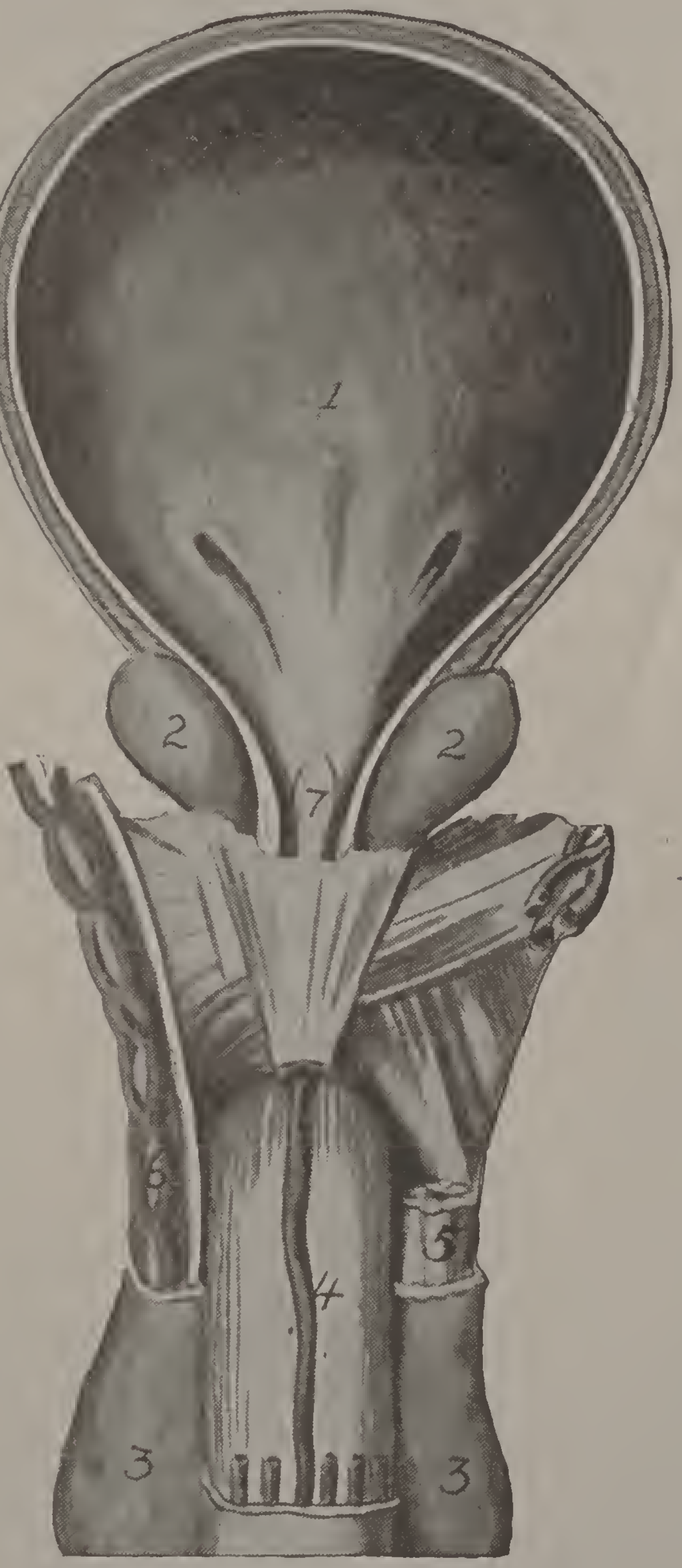
In addition to the *tunica albuginea,* or tough, fibrous coat of the testis already referred to, there is the *tunica vasculosa,* a vascular layer, or in other words, a collection of blood-vessels held together by a delicate tissue of a meshlike nature. It covers the inner surface of the tunica albuginea and also the different partitions in the interior of the gland. Each testis consists of several lobules separated by fibrous membranes, and each lobule is composed of a network of very fine, convoluted tubes, the *tubuli seminiferi,* throughout which blood-vessels are minutely distributed. It is in these fine tubes that the semen is secreted, and the male germ-cells are matured, forming the spermatozoa. These tiny tubes join to form other tubes a little larger, and finally leaving the body of the testicle converge into one still larger tube, which is repeatedly convoluted or doubled upon itself, and which is known as the *epididymis.* This partly covers the testis above and borders it behind. This convoluted tube, the epididymis, is the first part of the excretory duct of the testis and at the lower part of the testis is continuous with the *vas deferens,* or in other words, empties into the *vas deferens,* which extends upward and forms the great part of the excretory duct. The upper part of the epididymis is called the *Globus major,* the main central part the *body,* and the lower part which joins the *vas deferens* the *Globus minor.*

The *vas deferens* is cylindrical in form, with a diameter about that of the lead of an ordinary lead pencil, its walls are dense, it is hard and cordlike to the touch, and usually about two feet in length. It passes up with the spermatic cord through the abdominal wall, first through the external (inguinal) ring, then through the so-called inguinal canal, which is about an inch and a half long, then through the internal ring, finally passing backward at the side of the bladder and then downward and under the bladder to the seminal vesicle and to the base of the prostate. At this point the vas deferens enlarges and converges with the duct of the seminal vesicle to form an ejaculatory duct.

It will be seen that anything which serves to obstruct these passages and prevent the outlet of semen will result in sterility, if both sides are involved. Gonorrhea sometimes penetrates to these parts, and it is a simple matter for it to result in such damage that the very small tubes described will be permanently closed. Sterilization of criminals and defectives is sometimes intentionally accomplished by a simple operation, namely cutting the vas deferens on each side.

The operation of *castration* consists usually in removing the testicles, which naturally makes one sterile and generally impotent as well. However, inasmuch as this does not always completely destroy the sexual instinct, the entire genitals are sometimes amputated. The loss of both the testicles is always accompanied by a lack of energy and of the usual attributes of virile manhood. The eunuch is lacking in spirit and ambition, just as the ox is lacking in the strength and fiery spirit of the healthy bull. One who is deprived of his manhood in this way is only a shadow of what he would have been if in possession of full virility. The voice becomes effeminate, coarse and unmusical, and the entire body reflects the change in a similar manner. The loss of both testes sometimes results in insanity. Where one is lost, the other usually develops to such an extent as largely to compensate for the loss, and there is not necessarily a loss of virility. Where there is a deterioration in the condition of the testes and impaired functioning, the effect on the general health is much the same as in the case of complete loss, though varying according to the degree of the impairment.

It is considered by some authorities that in addition to the development and ripening of the germ-cells, the testes have also the function of forming a vital "internal secretion" which is taken up by the blood and is indispensable in maintaining a high degree of energy and general bodily health. It is said that the lack of this internal secretion is most detrimental, and in the case of one who has been castrated is responsible for those changes which are so similar to the differences between the fiery bull and the slow-moving, apathetic ox. There is no question about the fact of such changes and such influences, but as to whether there is any such special "internal secretion," we cannot say. It is quite possible that the essential vital secretion is simply the seminal fluid itself, which is probably absorbed, when not expelled, and which we know to be the most vital product of any gland or part of the body. This is a matter to be determined by extensive scientific research. In any case, the relation of the secretions of the testes to the state of general bodily health and energy is such as to suggest at once the necessity for avoiding waste



1. Bladder.
2. Lateral lobes of prostate.
3. Scrotum.
4. Dorsal vein of penis.
5. Spermatic cord covered by cremasteric muscle.
6. Spermatic cord after removal of cremasteric muscle.
7. Seminal collicle.

of vital force through these channels. The entire nervous system is very closely related to the generative system, and impairment of the latter reacts injuriously upon the former.

The testes are extremely sensitive organs. Injuries and diseases of these glands, especially when there is much inflammation, give rise to the most agonizing pain and general bodily depression. Injuries to these parts result in a general condition of shock to the entire organism.

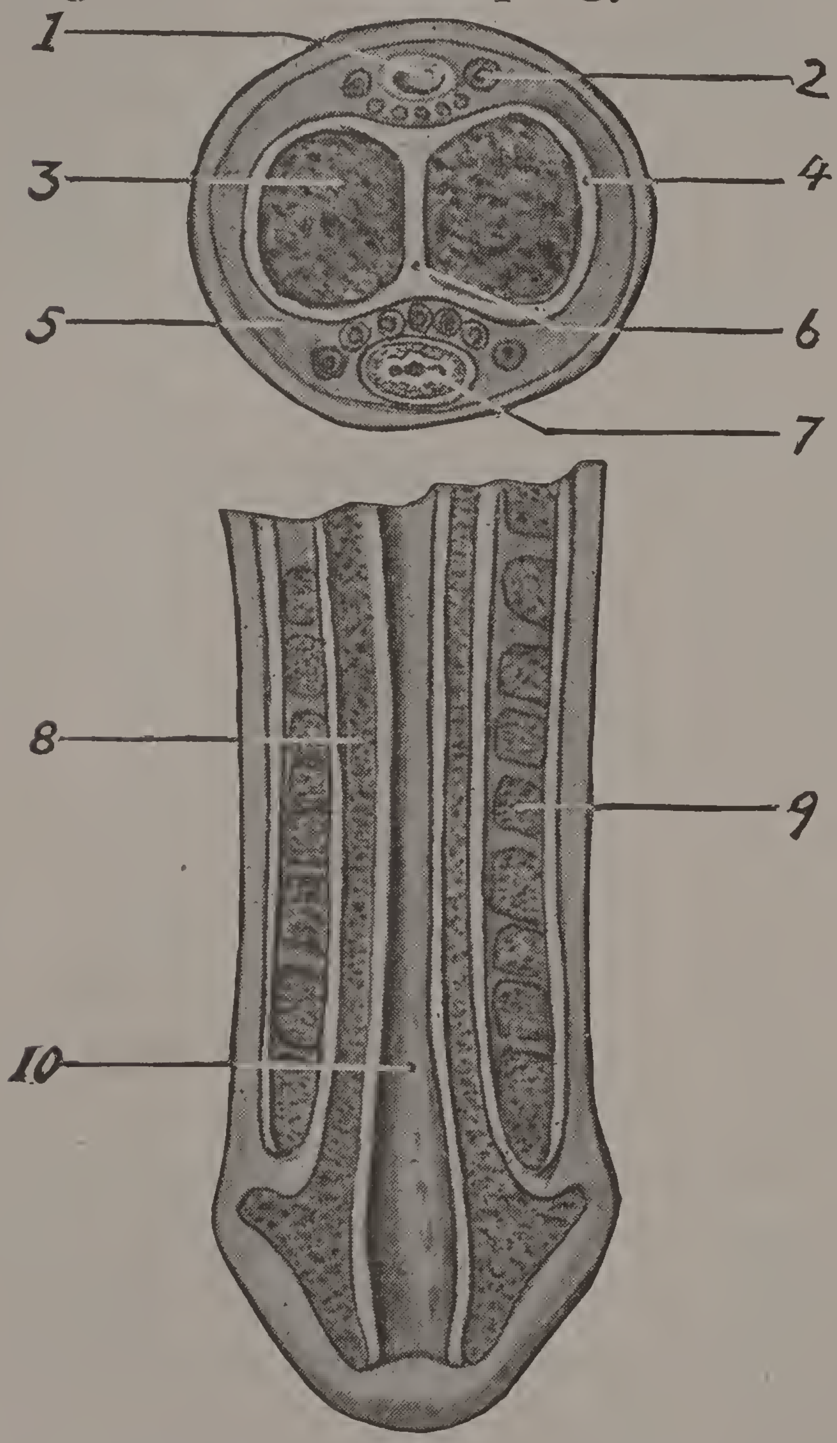
THE SEMINAL SECRETION, in a healthy, normal state, is a somewhat milky fluid of a mucous consistency, and of neutral or slightly alkaline reaction. The peculiar odor which it possesses is probably derived from one of the secretions with which it is mingled. The semen consists of the *liquor seminis,* a transparent, colorless, albuminous liquid, the *seminal granules,* solid particles in the form of round granular corpuscles, and the *spermatozoa,* or mature male germ-cells, which are the essential fertilizing element. The spermatozoa are present in large numbers in the semen of a healthy and virile man, and fertility depends upon both their number and their vitality. Their bodies are similar in shape to the familiar tadpole, though longer proportionately and more threadlike. They are very tiny, and to be discerned only with the aid of the microscope. Each spermatozoön consists of a head, triangular in shape, a middle-piece or so-called body, and an elongated filament or tail. The tail is about four times the combined length of the head and middle-piece and its terminal part, or end-piece, is extremely fine. The whiplike tail is continually in motion and acts as a propeller, giving the spermatozoön the power of self-movement. It is, indeed, the function of this propelling tail to carry the male germ-cell to the female reproductive element or ovum. If placed in the vagina the spermatozoön may retain its vitality for some days, or even two or three weeks. Having penetrated the ovum, the tail quickly disappears, being apparently absorbed by the cytoplasm of the former.

THE SEMINAL VESICLES are two lobulated membranous pouches placed between the base of the bladder and the rectum, and intended to serve as reservoirs for the semen. They also secrete a fluid to be added to the secretions of the testicles, thus increasing the quantity of fluid so that this may the better serve as a vehicle to carry the spermatozoa. Each vesicle is a coiled tube, with many coils and compartments, and the whole takes the form somewhat in the nature of a pyramid, the broad end being directed backward and the narrow end forward toward the prostate gland. The seminal vesicles vary in size not only in different individuals but also in the same individual, though the average length is something like two and a half inches. The seminal fluid when first formed passes from the seminiferous tubules of the testicle into the epididymis, then through the vas deferens into the seminal vesicle, there to be stored up. Finally, during the procreative act it passes by way of the ejaculatory duct into the urethra and is discharged.

Having traced the formation of the male reproductive element, and before considering the prostate gland, the ejaculatory duct and the structure of the urethra, we may now consider the mechanism by which fertilization is accomplished.

The Penis, though serving the function of urination, is essentially a reproductive organ, inasmuch as urination may be accomplished without it. As a rule its size has no special relation to that of the individual, for it is not unusual for small men to have large organs, while large and well-developed men may have them much smaller. Furthermore, the size of the organ, provided it has not actually atrophied through disease, bears no relation to the question of virility or the capacity for reproduction. On an average, however, it is from three to four inches in length in a flaccid condition and from five to seven inches when in a state of erection.

The penis is hollow and spongy, consisting of a *root,* a *body* and an extremity, or *glans.* The root is firmly fastened to the pubic bone and to the ischium or seat-bone by two strong, tapering fibrous processes. The body, which is the bulk of the organ between the root and the glans, consists of a mass of porous, erectile tissue inclosed in three cylindrical, fibrous compartments. The greater part of this tissue is found in the two cavernous bodies, the *corpora cavernosa,* which are placed side by side along the upper part of the organ. Below them is the smaller third body, the *corpus spongiosum,* through which passes the urinary canal, the *urethra.* When the organ is in a flaccid condition it is cylindrical in form, but in erection it assumes a somewhat triangular, prismatic form, with rounded angles. The loose, spongy tissues of these bodies, richly supplied with many small blood-vessels, respond very quickly to mental and mechanical stimuli, causing the cells, capillaries and veins to fill with blood, thus creating an enlargement and a state of erection. The septum or partition between the two *corpora cavernosa* consists of a number of vertical bands arranged not unlike the teeth of a comb, whence its name, septum pectiniforme. The interior of the *corpora cavernosa* consists of separate compartments of the erectile tissue referred to, freely communicating with each other, and filled with venous blood. This blood is returned by a series of vessels, the greater number of which pass out at the root of the penis.



Cross Section of Male Generative Organ.
1. Dorsal vein of penis.
2. Dorsal artery of penis.
3. Cavernous body of penis.
4. Albuginous tunic (a strong white, fibrous covering of the cavernous body).
5. Loose subcutaneous tissue surrounding entire penis.
6. Septum of penis (consisting of same fibrous tissue as 4).
7. Urethra, with its own cavernous body.
8. Cavernous body of urethra.
9. Cavernous body of penis.
10. Morgani's folds (lacunae).
11. Prepuce.

The *corpus spongiosum.* enclosing the

urethra, fills in the groove on the under surface of the two *corpora cavernosa.* It commences posteriorly with a rounded enlargement, the bulb, and terminates anteriorly in another enlargement which constitutes the glans, which we have already mentioned, and which overlaps the *corpora cavernosa.*

The glans is cone-shaped, but somewhat flattened from above downward. At its base is a round, projecting border or ridge, called the corona glandis. Around about this corona are many sebaceous glands, their secretions requiring constant care in the way of cleanliness. A lack of cleanliness not only will result in an offensive condition of the part, but may produce irritation and severe inflammation. The thin skin of the glans contains the ends of the many delicate nerves of sexual sensibility. At the apex or tip of the glans is a vertical fissure, which is the orifice of the urethra (*meatus urinarius*). The seeming constriction back of the corona or ridge of the glans is named the *cervix,* this part, like the corona, having many sebaceous glands which give forth secretions of a peculiar odor. The body of the penis is covered by a thin integument or skin of a darker color than the skin of the body generally. This skin is of great mobility, and at the cervix or neck of the glans leaves the surface and becomes folded upon itself to form the *prepuce* or foreskin. It is a portion of this skin that is cut off in the operation of circumcision. Just below and back of the mouth of the urethra is a frenum or ligamentous fold, which attaches the inner part of the prepuce or foreskin to the under side of the glans. This commonly leaves the extremity partly exposed. It will be seen from the above, however, that it is important each day to pull the foreskin back to uncover the corona and cervix and to wash these parts thoroughly.

The *urethra,* as we have seen, forms a tunnel through the corpus spongiosum and in this section is naturally movable, being referred to as the penile or pendulous urethra. The deep, internal part, however, extending to the bladder, is fixed. Anatomically, the urethra is divided into three parts:

The *spongy urethra,* extending through the corpus spongiosum from the meatus urinarius back to the second part, is about six inches long, and at its posterior part is expanded somewhat into what is termed the bulb. Through this entire section it is surrounded by muscular fibers, but these are particularly numerous and vigorous at the bulb. These muscular fibers assist in expelling the urine, the semen and also discharges produced by disease.

The *membranous urethra,* sometimes called the "muscular" urethra, is the second or middle part, one inch in length or a little less, and extends from the bulb back to the apex of the prostate gland. It possesses considerable constricting power, helping to prevent the escape of urine from the bladder on the one side and offering some slight opposition to the inward passage of foreign matter or infectious secretions from the spongy urethra.

The *prostatic urethra* is the third section, which passes through, or is surrounded by the prostate gland, and which extends to the opening of the bladder. It varies in size according to the size of the prostate, but on the average is about an inch and a quarter in length. We will shortly refer to the prostatic urethra again, in connection with the discussion of the prostate gland.

Throughout its entire length the urethra is lined with mucous membrane not unlike that of the mouth, throat and intestines and this membrane is supplied with great numbers of mucous glands.

Cowper's glands are a pair of small rounded bodies about the size of peas, placed at each side of the membranous urethra and just back of the bulb, into which open their excretory ducts, nearly half an inch in length. The secretions of these glands together with those from the prostate, are intended both to lubricate the mucous membrane of the urethra and to add to the bulk of the semen.

The Prostate Gland is a partly glandular and partly muscular organ placed just below the neck of the bladder and surrounding the urethra at that point. It is not unlike a chestnut both in form and size, the apex being forward. Though it varies somewhat in size, it measures on an average about an inch and a half transversely at the base, and its weight is about four and a half drams (over half an ounce). It consists of two lateral lobes of equal size, and a middle lobe in the form of a small transverse band between the two lateral lobes in the posterior part of the organ. Its envelope is a thin but firm fibrous capsule, of a pale, reddish-gray color and great density.

Though the muscular fibers of the prostate and the muscular structures surrounding it assist in expelling the urine and semen, and aid the sphincter muscle at the neck of the bladder in checking or controlling the flow of urine, yet urination could really be carried on without it, as in the female, and the real function of the organ is of a sexual nature. On this account it should normally shrink with old age. Enlargement of the gland in old age is frequently met with, but the best authorities regard this as an abnormal condition and the result of disease in all cases. Enlargement will usually interfere with urination, as will various other disorders of the part. When enlarged, its condition may readily be felt through the rectum. It is sometimes subject to tuberculous disease, or may become the seat of suppuration as the result of injury. In a serious attack of gonorrhea, unless radical and proper natural treatment is immediately adopted, the glandular structures of the prostate are almost sure to be attacked. If medicinal treatment alone is adopted, a disease of this kind may linger in the recesses of these tissues almost indefinitely.

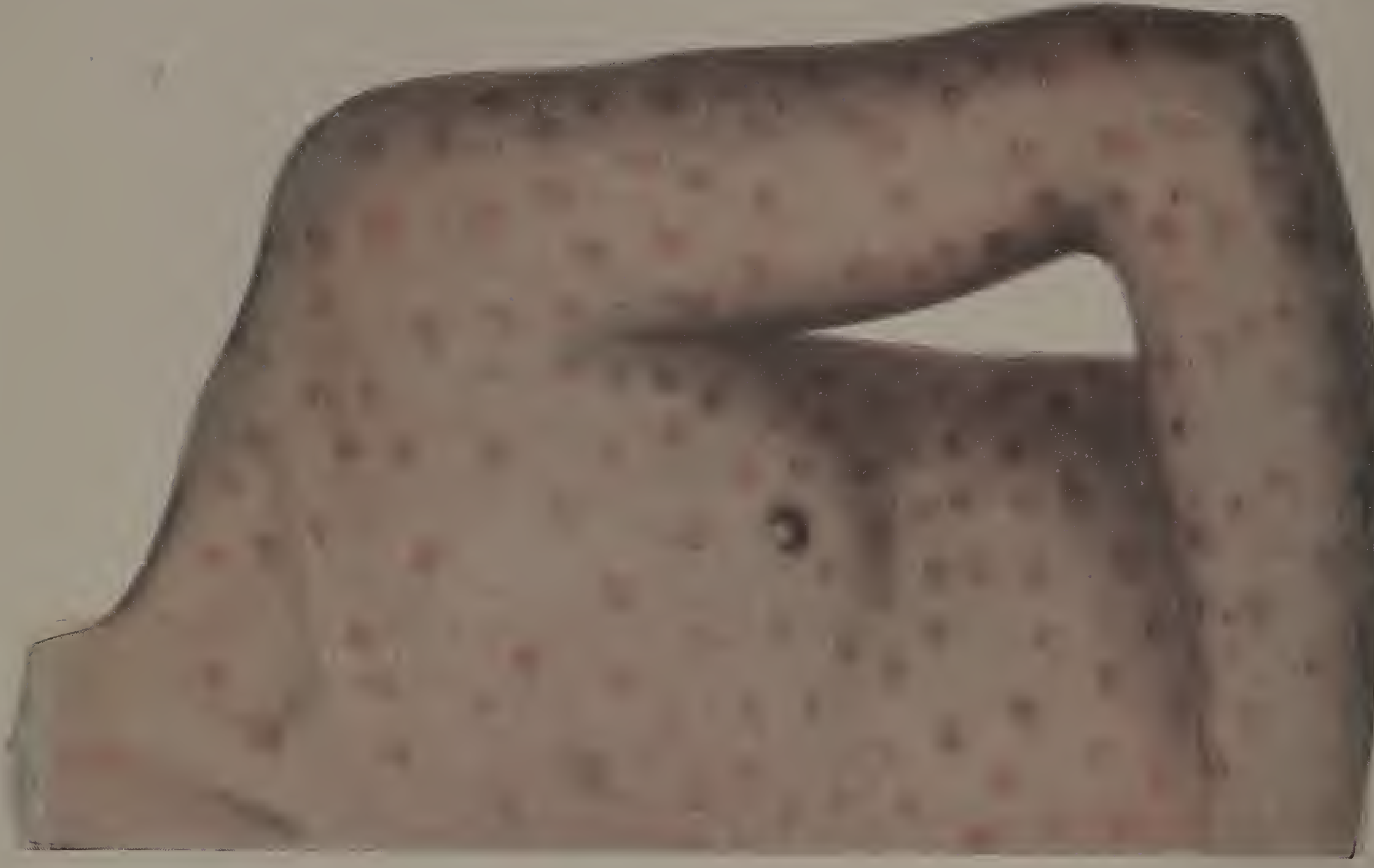
The *ejaculatory ducts,* like the urethra, pass through the prostate gland. Two in number, they are formed on each side by the converging and junction of the vas deferens with the duct of the seminal vesicle. They are about three-quarters of an inch in length, and from the base of the prostate they pass upward and forward through the structures of this organ, converging and diminishing in size, to open upon the floor of the prostatic urethra. It is readily seen that disease of the urethra may enter the ejaculatory ducts and travel inward both to the seminal vesicles and to the vas deferens, and through the latter to the epididymis and the delicate gland structures of the testes.

The prostatic urethra also contains the openings from the prostatic ducts, from fifteen to twenty on each side and carrying the secretions of the glandular substance of the prostate. In the prostatic urethra, likewise, are located the ends of a large number of nerves, including the nerves of urinary desire. Just here in these nerve ends is said to be the center of sexual sensibility, so that the importance of the structure is apparent. Disease of these nerves may lead to impotence, morbid sexual excitement, erotic dreams, other sexual disorders, neurasthenia or frequent desire to urinate.

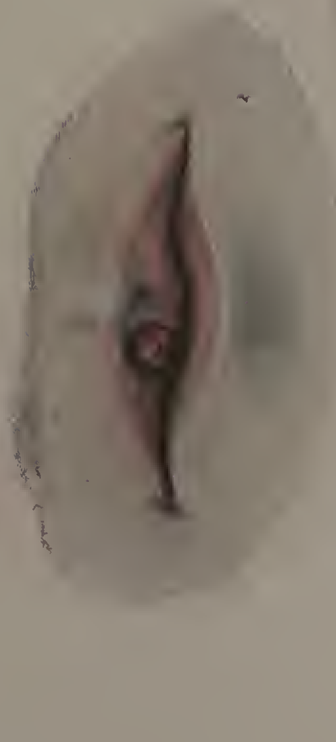
As we have seen, all parts of the male generative system are well supplied with both blood-vessels and nerves and are highly sensitive. In the course of procreative activity and the excitement of the nerves of the parts incident thereto, there is produced at the crisis of sensation known as the orgasm, a reflex contraction of the muscular fibers of the prostate and related parts. As a result, the seminal vesicles and the prostate discharge their contents into the urethra, from which they are expelled with some degree of force. A subsequent nervous depression is apt to follow, due to the high degree of nerve tension called for. Too frequent or successive repetition of the procreative act cannot be other than injurious to the health. Solitary indulgence (masturbation) works the greatest possible harm to the powers of both mind and body.

Aside from the special requirements of strict cleanliness of the parts, the general requirements of sexual hygiene for the male are discussed in Chapter II, and, in even greater detail, in Chapter IX of this volume.

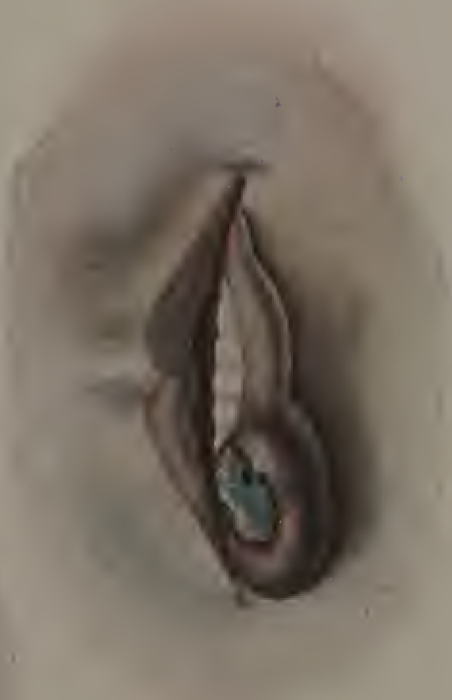
PLATE C



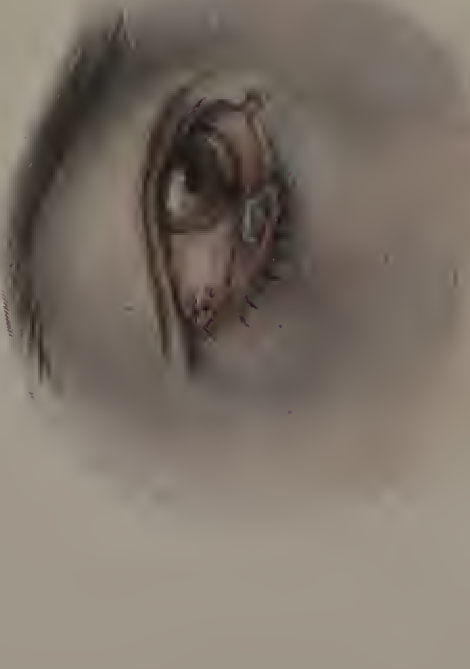
Copper-red or purplish syphilitic eruption (erythematous).



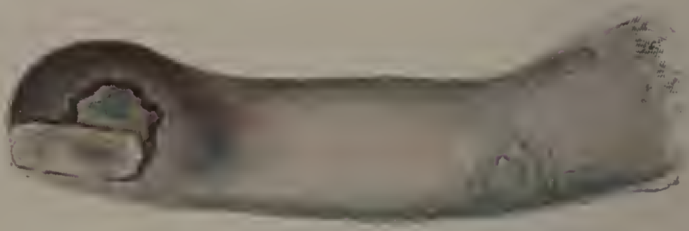
Chancre of the upper lip.



Chancre of the lower lip (inner side).



Chancre of the eyelid (not common).



Chancre at base of finger nail.

CHAPTER VIII.

DISORDERS OF THE MALE GENERATIVE SYSTEM.

THE special diseases and disorders of the male sex may be roughly classified as venereal and non-venereal. The so-called venereal diseases are gonorrhea, syphilis and chancroid, being clearly the result of infection by a specific virus. These are not peculiar to the male sex, but may be acquired by either sex from the other. The non-venereal diseases include a considerable number of disorders, including so-called "non-specific" diseases. In addition to actual diseases of the generative organs, common deformities of the parts, weaknesses, or impairments of function growing out of mere weakness, and morbid practices are appropriately considered in this chapter.

These various diseases and disorders of men offer a lucrative field of practice for the medical profession, and especially for those unprincipled members thereof who are familiarly termed "quacks," and concerning whom we shall have something to say in the next chapter. Especially do they find profit in connection with the specific venereal diseases, which are alarmingly prevalent. In no other field, however, do we find a better illustration of the effectiveness and certainty of Physcultopathy as a means of cure than in these various disorders. In nearly all of them it is found that neither medicine nor surgery is of the least avail, and that the only hope of improvement and recovery lies in the blood-purifying and vitality-building constitutional measures which are advocated in these volumes. The disorders are taken up in alphabetical order.

Adhesion of Prepuce to Glans.—See *Phimosis.*

Balanitis.—An inflammation of the glans penis or inner surface of the prepuce, with a purulent discharge. We have seen that the corona or ridge of the glans and also the cervix are profusely supplied with sebaceous glands, even the normal secretions of which are such as to demand daily attention in the way of cleanliness. When neglected, these secretions give rise to irritation and to inflammation, constituting the simple form of balanitis. The irritation may cause handling of the part and lead to habits of masturbation. It is most frequently found in those with a long and tight prepuce, or in cases of phimosis (see page 2721). It is also found in some cases as a result of gonorrhea or syphilis, making attention to those complaints necessary in addition to the simple treatment suggested here.

Technically speaking, balanitis is inflammation of the glans itself, while that of the prepuce or foreskin is called *posthitis.* The treatment for the disorder is the same as for balanitis.

Treatment. Being a common complaint, balanitis is briefly considered in Volume IV, with treatment suggested in the way of thorough and frequent washing. In addition to this, if there is much pain, cold wet cloths may from time to time be wrapped around the part and allowed to remain, especially at night. No medicinal treatment should be applied, the nearest to this permissible being a mildly antiseptic powder of half each of starch and (powdered) boric acid. If there is much purulent discharge, a very little sterilized lint or absorbent cotton may be used, placed dry after each washing and drying, and only allowed to remain a short time. If soap and hot water prove irritating, a solution of boric acid may follow for thorough rins-

Severe form of inguinal bubo.

ing. In a serious case, constitutional treatment will also be necessary.

BLENNORRHAGIA.—An excessive discharge of a catarrhal nature from the urethra or vagina. (See *Urethritis* and *Gonorrhea.*)

BUBO.—An inflammation and enlargement of the inguinal glands. It is so named from a Greek word meaning groin, from the fact that the disease usually appears in that part. It is the result of an infection, usually venereal in nature. Similar infection of the lymphatic glands may take place in other parts of the body, in those of the neck, for instance, from disease which enters through the head or neck, in the axilla or arm-pit, when the hand or arm is the seat of an infection, or below the groin when some disease originates in the foot or leg. Tuberculosis, bubonic plague, pus or general infections may give rise to disorders of this kind, but in most cases it is due to chancroid, syphilis or gonorrhea, and is located in the groin.

When of syphilitic origin, appearing in seven to ten days after the hard chancre, bubo takes the form of a hard swelling which is not painful. When due to other causes, however, the disorder is painful and has a tendency to suppurate. Bubo from chancroid nearly always suppurates unless proper constitutional treatment is adopted early. It may develop a couple of days after the chancroid appears or at any time following. When due to gonorrhea it appears at an interval of from five or six days to two weeks. It commonly appears on the same side as the original seat of infection.

The presence of a simple bubo is recognized by a hard swelling of the gland, pain in the groin, with extreme tenderness to the touch, an inability to move the part without severe suffering, and the usual heat and discoloration of an inflammation. If the inflammation is severe, the pain is continuous for from one to three or four days before suppuration occurs, when the pain may disappear and a soft locality may be felt that is moveable on pressure. The bubo next assumes a dark, livid color and finally breaks. If the opening is small, the pus does not readily escape, and is likely to penetrate into surrounding tissues, and by so doing gives rise to other abscesses. The opening of the bubo usually presents the appearance of a simple wound, and heals in the same manner as an ordinary abscess. Fistulous ulcers may form which heal only with difficulty. There may be more or less sloughing or ulceration, involving considerable destruction of tissue. Profuse hemorrhage may result from the opening of blood-vessels, or in rare cases the condition may become chronic and finally give rise to general blood-poisoning (septemia) with even fatal results.

Sometimes the bubo becomes a tumor that slowly enlarges to the size of a hen's egg. In other cases there is no tendency to form an abscess, and there is a lingering inflamed condition of the cords and glands extending into the scrotum with a dull, persistent pain in the testicles. What is sometimes called a virulent bubo is a chancroidal bubo caused by the absorption of pus from a very active and destructive chancroid or from a mixed chancre (both syphilitic and chancroidal). Upon discharging, the edges of the opening become ulcerated with the chancroid virus, developing an extensive sore that almost refuses to heal, and resulting in much necrosis or destruction of tissue. The virulent bubo may cause inoculation of chancroids on others because of its discharges. See also *Syphilis,* for reference to bubo formation in connection with that disease.

Treatment. The preventive phase of treatment is a most important one in connection with bubo. By proper constitutional treatment, following the first symptoms of an attack of gonorrhea, syphilis or chancroid, the formation of a bubo may invariably be avoided. The use of alcohol in such a case is a strong contributory factor in causing bubo, as is also sexual indulgence under the same circumstances. A moderately quiet life in connection with the treatment of the primary infection is to be recommended, for strain or violent exertion may result in carrying the infection to the lymphatic glands.

Since bubo is usually a complication of some other venereal disease, it naturally follows that the treatment should be chiefly directed to the cure of the primary disorder, and all possible constitutional measures for eliminating poisons and purifying the blood are necessary, including fasting, diet, water drinking, regulating the bowels and fresh air. The dietetic and general regimen outlined in Vol. IV for the treatment of bubo should be followed closely, with special attention to the sitz baths and wet packs mentioned. Surgical treatment is very commonly resorted to in connection with bubo, and may be of advantage in a few extreme cases, but if our methods of treatment are followed there will be no necessity for resorting to such extreme and radical measures. In the case of a virulent bubo special care in the way of cleanliness is essential, using packs of cloths wet in cold salt water or in some very mild antiseptic solution.

Castration.—The removal of the testicles producing both impotence and sterility. In certain Oriental countries there is a considerable demand for eunuchs, as emasculated men are called, for service in the harems of wealthy men. Inasmuch as the removal of the testes does not always completely destroy the capacity for sexual intercourse, the entire genitals are sometimes amputated, and eunuchs of this type are most in demand. The miserable creatures subjected to this barbarous practice are chiefly drawn from savage tribes in certain sections of Africa. Apparently the operation is crudely performed, for it is said that a vast number of the victims die as the result of it.

Not only does castration destroy the reproductive capacity and with it usually the reproductive instinct, but it has a similar effect in stifling one's ambition, robbing him of his energy, and impairing the health and strength of the body generally.

Surgically considered, in civilized countries, castration may mean the removal of either one or both testicles to relieve some diseased condition of the parts. As performed by skillful surgeons, there is nothing like the mortality attending the production of eunuchs in barbarian countries, though the unsexing nature of the operation is just the same. Castration is performed in cases of cancer, and in some cases of tubercular or syphilitic conditions of the testes.

Chancroid.—An ulcer, round or oval in form, usually found on the head of the penis, which secretes and freely discharges a purulent pus. This secretion is highly infectious, and if strict cleanliness is not observed may give rise to other ulcers of the same kind. Chancroid is invariably the result of contact with an infected woman, and usually with one of the lowest and most unclean type, for it is especially a disorder arising from filth. It may be located on any other part of the body to which the infection is carried, but is less frequently found on other parts than the other venereal diseases.

Chancroid is sometimes called *soft chancre* to distinguish it from *hard chancre* or *true chancre* which is the primary sore in syphilis. It is well to distinguish between these two sores, so as to recognize the nature of the disease in either case. The chief immediate difference is suggested in the names of hard chancre and soft chancre, the syphilitic sore being indurated, or hardened, while the chancroid is soft and very quickly forms pus. The hard chancre or syphilitic sore secretes little or not at all, is usually smooth, glazed, red, dry and painless. The chancroid is grayish, with an uneven surface and rough edges, is surrounded with a red, inflamed area, is painful, and very rapidly enlarges and grows deeper, perhaps giving rise later to other chancroids in the immediate neighborhood. It may result in the destruction of a large amount of tissue in a short time. The syphilitic chancre often disappears without treatment, or may develop *slowly* into a scaly ulcer. (See *Syphilis.*) Chancroid follows exposure and infection quickly, sometimes within twenty-four hours, and almost always in less than a week or ten days, while the incubation period of syphilis is usually about three weeks it may be from ten to forty-five days.

Chancroid is a purely local affection, while the hard chancre is followed by the various constitutional symptoms of syphilis, which enters the blood stream and may extend to all of the tissues of the body. The chancroid, irritated by medicinal treatment, may become hardened and thus mistaken for chancre. It is possible to contract both chancroid and syphilis at the same time, this "mixed sore" first having the typical appearance of chancroid. There are even cases in which chancroid, syphilis and gonorrhea are all present at the same time.

Chancroid is commonly accompanied by bubo, in which case the purulent matter has reached the lymphatic glands, but usually goes no farther. The glands become swollen, tender, hot and painful, and suppuration is likely to take place, the swellings becoming soft and then opening to discharge the pus. (See *Bubo.*) Not only may a chancroid spread, in extreme cases, destroying the prepuce or glands, or even the entire genitals, but it may possibly reach large blood-vessels, causing a general septic infection of the system, and ending in death through blood-poisoning.

Treatment. Although chancroid is not in itself a constitutional or blood disease, yet constitutional treatment and improvement of the quality of the blood are most important for the sake of maintaining or increasing the vitality of the local tissues and the glands which may be involved. On this account the dietetic and general constitutional regimen advised in Volume IV, under *Chancre or Chancroid,* should be followed closely. This, together with absolute cleanliness, should be sufficient in many cases. The thorough use of hot water and soap twice daily must not be neglected. Immediately after each cleansing, take the cold sitz bath. In addition to this, cloths dipped in salted water should be wrapped around the organ, so as to remain in contact with the ulcer. Washing with a mild antiseptic will be an advantage for cleansing purposes in a serious case, or the antiseptic applied with absorbent cotton may be kept on the sore continually.

Chordee.—See under *Gonorrhea.*

Circumcision is the operation of cutting off as much of the prepuce or foreskin as can be drawn forward beyond the extremity of the penis, sometimes perhaps a little more, so that the head or glans of the organ thereafter is uncovered, or largely so, instead of being protected by this sheath.

Circumcision appears to have originated as a religious rite and as such is still practiced by Jews and Mohammedans. There are many who recommend its general practice as a sanitary measure, but though there are many instances in which it is both necessary and beneficial, it is not a necessity in normal cases. There are occasional cases in which the prepuce is too tight, making it impossible to uncover the glans for the sake of thorough cleansing (see *Phimosis*), and in such instances, the sooner circumcision is performed the better. The question of circumcision, in short, may usually be determined by the possibility of keeping the parts clean and healthy without the operation. If the prepuce is normal, and can be drawn back so as to expose the corona and cervix for washing, then there is no reason for the operation. Remember that the glans is a very delicate and sensitive structure, unusually well supplied with nerves, glands and blood-vessels, and that the prepuce is designed to serve as a protection. The argument that the modern use of clothing makes this unnecessary has often been brought forward, however, in support of the practice.

The theory has been advanced that circumcision makes one less prone to venereal disease, but the conclusion is not borne out by the facts. Gonorrhea attacks the mucous lining of the urethra, and the fact of being circumcised has no influence one way or another. Syphilis also is absolutely certain whether circumcised or not, if there is any abrasion of the organ when exposed to the disease. And while it is true that vegetable poisons in a tropical country, other foreign matter or dirt will not be able to lodge between the prepuce and glans if the prepuce is removed, yet in the latter case the glans is directly and continuously exposed. It is claimed that exposure of the glans makes it less sensitive, and it is probable that this is true, and it is often claimed that for this reason circumcised children are less likely to fall into bad habits. Of course, the question of cleanliness is the all important factor here, and this is a matter largely determined by the inclinations and personal habits of the individual, whether circumcised or not. No doubt the practice may be recommended as a hygienic measure in many cases, but it is not a necessity in those of clean habits.

COWPERITIS.—Inflammation of Cowper's glands is a not uncommon complication of a deep-seated case of gonorrhea.

It is manifested by a slight swelling and extreme tenderness on one side of the perineum, if one gland is involved, and on both sides if both are affected. Abcesses are likely to form if improperly treated or neglected. The treatment should be the same as for acute prostatitis, though if there is a very serious abscess, surgical help in opening it may be necessary.

DEFORMITIES, SEXUAL.—See *Undeveloped Organs.*

GLEET.—Gleet is the term applied to a chronic catarrhal discharge from the urethra, usually following an improperly treated or neglected case of gonorrhea. (See *Gonorrhea.*) It is, in many cases, the result of a stricture, which, in turn, is sometimes one of the consequences of gonorrhea. Gleet may usually be called the chronic phase of gonorrhea. The acute symptoms of gonorrhea may subside into chronic gleet so gradually that it is hard to draw the line between the two diseases.

Symptoms. There is a discharge from the urethral canal, varying from a thin, colorless fluid to an opaque pus, indicating a chronically inflamed or catarrhal condition of the mucous membrane, though there is usually no pain, redness or swelling, as in gonorrhea. In some cases the urine contains threads or epithelium (*tripperfaden*). Sometimes the lips of the opening are found glued together in the morning. In some instances the orifice may be so sealed in this way as temporarily to check the flow of urine, causing a distention of the urethra and a sharp pain. In some cases there may be a sense of itching or uneasiness in the deeper parts. Beyond these, however, there are no other sensations or symptoms.

Gleet sometimes disappears for weeks or even months, only to reappear. Dissipation, excesses or overwork may cause such a return. Sometimes the discharge is noticeable only in the morning, and in other cases it is continuous. In many cases the disorder is located in the deeper parts of the urethra, perhaps driven there by strong injections, after which the pressure of the inflamed surfaces against each other keeps up an irritation after the gonorrhea itself has been eradicated. Sometimes the disease is really located in the prostate gland, Cowper's glands or the seminal vesicles, with gonorrheal pus cells lurking there, and in such a case the gleet may develop a true gonorrheal condition at any time, especially if aggravated by alcohol, dissipation, or sexual indulgence. In such an instance also the supposed sufferer from gleet only may infect a woman with gonorrhea.

Treatment. Constitutional treatment is demanded in all cases of gleet, following a strict vitality-building regimen. An uncooked diet is usually preferred, but to secure radical and satisfactory results the fasting and dietetic regimen given in Volume IV for *Gleet* (under Gonorrhea) should be followed strictly. Beyond this, the general suggestions for treating gonorrhea may be followed, especially in regard to sitz baths and wet packs. There is one important difference to be observed in the treatments for gonorrhea and gleet respectively, in that complete rest, aside from walking, is desirable during the inflammatory processes of gonorrhea, while a large amount of vigorous exercise is advantageous in connection with gleet. Generally, temperate habits, open air life and a low diet are invaluable.

GONORRHEA.—(Specific Urethritis; Blennorrhagia; Clap.) An inflammatory disease of the mucous membrane of the genital organs, in either sex, characterized by a profuse catarrhal discharge of a purulent and highly contagious nature. (See also *Urethritis.*) It is the result of direct infection during unclean sexual intercourse, and is due to a specific micro-organism known as the gonococcus. This germ has the form of a hemisphere and is found in pairs, which on dividing form groups of four. The gonococci are very persistent and are not easily killed. One attack does not give immunity against future attacks, and there are many men who have had the disease a number of times.

In nearly all cases the disorder is local and does not invade the system as a whole, but there are cases in which general blood infection takes place, producing gonorrheal rheumatism, a most distressing and agonizing malady, and other disorders. Affecting the heart, the disease is very serious.

The membranes of the eyes and eyelids are particularly susceptible to the action of the gonococci, when infected by careless and unclean hands, the course of gonorrheal iritis being so swift and violent as to cause total and incurable blindness in three days' time. This disease, indeed, is responsible for from 20 to 30 per cent. of all cases of blindness, caused chiefly by infection of the eyes of infants at birth. This percentage was formerly 80 per cent., until it was found that a solution of nitrate of silver, immediately applied in suspected cases, would destroy the infection.

This is one of the most serious of all human diseases because of the fact that four out of every five men between the ages of eighteen and thirty contract it at some time. In a large number of these cases, sterility is the result. Innocent wives are commonly infected, sometimes by men who marry when they think themselves cured. Approximately three-fourths of all surgical operations upon women are the result of this disease, many of them being rendered sterile, and many others being sent prematurely to the grave. And yet there are many foolish and ignorant young men who regard it as "no worse than a bad cold."

In women, the disease may attack either the urethra or the vagina, including the vulva, and may spread from the vagina through the mucous membrane of the womb and up the Fallopian tubes, perhaps closing these and causing sterility, or perhaps involving the ovaries as well. It is often in cases of this kind that the ovaries are removed, though doubtless in a large number of these cases, even of the most serious nature, proper Physcultopathic treatment would render the operation unnecessary. In the case of women, special attention to cleanliness is necessary, and for this purpose daily douches may be advised, perhaps with a very mild antiseptic solution. Otherwise the constitutional treatment should be the same as in the case of men.

In men, the disease is produced by contact of the infection with the mucous membrane of the meatus or mouth of the urethra. It may be transmitted by mediate infection, as when gonorrheal pus is carried on a towel, on the hands or some other object, but practically always it follows connection with a diseased woman. The incubation period varies somewhat, but symptoms usually commence in from three to eight days after exposure. It is sometimes difficult to distinguish between gonorrhea proper and simple urethritis. (See *Urethritis.*) The latter may be contracted as the result of the discharges from an inflamed womb or a bad case of leucorrhea, and, being misunderstood, may give rise to suspicion and general domestic trouble.

The degree of inflammation depends in a large measure upon the condition of the individual, the purity of his blood and his general powers of resistance. We may say that there are three general stages of the disease. The first symptom of the primary stage is an uneasiness in the tip of the penis, or more specifically, an itching or tingling at the orifice of the urethra. The organ swells somewhat, assumes a reddish color and becomes tender, especially along the underside and in the reddened parts. There is slight discharge of thin white mucus, and there may be pain in passing water.

The first symptoms, gradually increasing, lead to the secondary or inflammatory stage in a few days, in which the discharge becomes thick, yellowish and copious. Urination becomes extremely painful, with a scalding sensation produced by the salts in the urine as it passes over the sensitive and irritated membrane. The extremity of the organ becomes very much more swollen, reddened and angry in appearance. In severe cases the catarrhal discharge may be streaked with blood. There may be more or less pain in the loins and back. This inflammatory stage may last from a week to several weeks, after which it gradually declines, the discharge and pain decreasing. This period of decline is the so-called third stage.

It is important to confine the disease, if possible, to the forward part of the urethra. If the disease penetrates to the lower part of the urinary canal the results may be far more serious and various complications may arise. The bladder may be infected, or the disease may involve the prostate gland, Cowper's glands and the seminal vesicles. When these parts are affected there is much irritation of the neck of the bladder and the patient experiences a constant and distressing desire to urinate. There may also be more or less irritation of the larger bowel, causing tenesmus, or desire to evacuate. An enlargement of the prostate gland from this cause may become permanent. Inflammation of Cowper's glands in gonorrhea may be accompanied by the formation of abscesses.

The testicles may be involved in a case of deep-seated gonorrhea, the infection traveling along the vas deferens and attacking the epididymis particularly. In such a case the disease assumes a truly serious character, for sterility not infrequently follows. The very fine tube of the epididymis may be obstructed by the inflammatory processes of this disease just as the Fallopian tubes in the female organism may be closed. If this occurs on both sides, complete sterility is inevitable.

Chordee. One of the distressing complications of gonorrhea is a state of painful erection of the penis, in which the organ assumes the form of a downward curve. This occurs chiefly at night, and the curved condition is due either to spasm of the urethral muscles or to the fact that the inflammation along the urethra prevents the corpus spongiosum from being distended as much as the corpora cavernosa. Chordee should be cared for gently, for "breaking" of it may cause much bleeding and will probably be followed by severe stricture. Indeed, a severe chordee in itself is inclined to produce slight ruptures of the urethra, making for stricture at some time later. If there is chordee, applications of cold, with a hot bath before retiring are advised in addition to the general treatment for gonorrhea.

Retention of urine is another complication which sometimes follows extreme swelling of the mucous membrane of the urethra. Sometimes this is associated with spasm, but more frequently it arises when stricture or prostatitis develops.

Gonorrhea of the anterior portion of the urethra, when it is confined to that part, may pass away entirely soon after the inflammatory stage subsides. But if the posterior part of the urethra is involved, with infection of the prostate and the seminal vesicles, then it may require a longer period of rigid adherence to treatment. The intimate structures of the organs are such that they may retain the germs of gonorrhea almost indefinitely when once they have become lodged therein, and certainly they have remained concealed in these intricate recesses for years in many instances in which medicinal treatment alone has been depended upon. Collections of pus cells containing gonococci sometimes exist long after the individual feels that he has been cured, and in such cases the individual may at some future time reinfect himself, or he may infect another. Marriage, therefore, following an attack of this disease, even though it appears to have been suppressed by medical treatment, is more or less risky unless the cure has been confirmed by a thorough examination. Sexual indulgence or violent exercise may have the effect of opening up such dormant gonorrheal pus collections. The treatment, therefore, cannot be too thorough.

Gleet. If properly treated, the third stage of gonorrhea in most cases progresses with a steady though gradual decline of the distress and discharge associated with the disease. However, if the patient is careless, his general health unsatisfactory and the treatment neglected, then this third stage may be followed by a chronic condition of inflammation and catarrh of the urethra. Usually, indeed, there is some catarrh of the mucous membranes for a time after the gonococci have been eradicated, but when this continues in a chronic form it is known as gleet. (See *Gleet.*)

Treatment of Gonorrhea. The treatment for gonorrhea must be largely constitutional, purifying the blood and increasing the vitality and resistance of the tissues affected. Local drug treatment is wholly unsatisfactory, except for a very mild antiseptic for cleansing the membranes and flushing out pus cells. Most antiseptic injections are too strong and have the result of producing stricture in many cases. I have already pointed out that the gonococci are very tenacious of life and hard to kill. As a rule, any drug or chemical strong enough to destroy them would also do even more damage to the sensitive mucous membranes and glands. Indeed, such drugs might be strong enough to destroy the tissues and yet be incapable of killing the germs, so that one should not think of depending alone upon any such treatment. For another thing, when the germs have penetrated into the seminal vesicles, into the minute and complex glands of the prostate and into other remote recesses, antiseptic injections into the urethra will not reach them, and one is forced to depend upon the natural forces of the body for a cure. It is true, however, that very mild antiseptic injections, for instance, a weak solution of permanganate of potash, just strong enough to give it a trace of color, might be helpful in the third stage, or perhaps in the very beginning of the first stage.

However, perhaps the most important feature of the treatment, in the very beginning, is the drinking of very large quantities of water, that is to say, a half pint or pint every half hour, or even more. The result of this is frequent and increased urination. As we have seen, a scalding pain when passing water is one of the principal symptoms, and this free drinking of water, with its result, may seem at first to add to the patient's sufferings. It is, nevertheless, of great importance, and in nearly every case will soon put a stop to the pain incident to urination. When drinking so much water, the urine is of course diluted, and the salts contained in it cannot irritate the mucous surfaces over which they pass to the same extent. Furthermore, the frequent and profuse passing of water will have the effect of flooding and carrying out the germs and reducing the inflammation. It is a factor of such importance in the treatment that one cannot afford to neglect it. It will help to cut the disease short, or, if it is not so aborted, it will tend to confine it to the anterior urethra.

In my brief reference to gonorrhea in Volume IV I have suggested a dietetic regimen, preceded by a fast in the very beginning which I would recommend in practically all cases. But whatever the diet, it is most important to avoid everything of a stimulating nature. Tobacco, alcohol, spices, condiments, salty foods, tea, coffee and meat should be avoided. Any disturbance of the digestive system and any tendency toward constipation will immediately have an aggravating influence upon the disease.

Overheating of the blood is to be avoided, and for this reason rest from active exercise is desirable during the course of the disease. The sitz baths and wet applications advised in Volume IV should be persisted in, and it would even be well to keep the organ constantly wrapped in cloths wet with cold salted water, both day and night, until the inflammation subsides. When dry the wraps should be remoistened, or, better, renewed. A pair of swimming trunks worn over the cloths will serve very well to keep them in place. Probably injections of the salted water would be preferable to other antiseptic injections in the first stages of the disease, after which use the weak and slightly colored solution of permanganate of potash. Be very careful to observe scrupulous cleanliness in handling the parts, and also care in disposing of the cloths, so as to avoid carrying the infection. To infect the eye, as already seen, is sure to bring about appalling results. Cloths used should be burned or subject to prolonged boiling when washed. All suggestions for treatment given in Volume IV should be carefully read and followed.

When the prostate and the seminal vesicles are involved the treatment should be the same, though after a cure has been accomplished a large amount of active exercise is especially recommended. If there are remaining traces of the disease, they will thus usually be brought to light and eradicated. Because of the possibility of germs lurking in these recesses, there should be a thorough examination of the seminal secretion, to ascertain the presence or absence of gonococci, before attempting to marry. In any case, a considerable period of time should elapse. By the above methods, faithfully persisted in, a complete cure can always be effected. (See also *Gleet, Prostatitis, Epididymis, Bubo, Stricture.*)

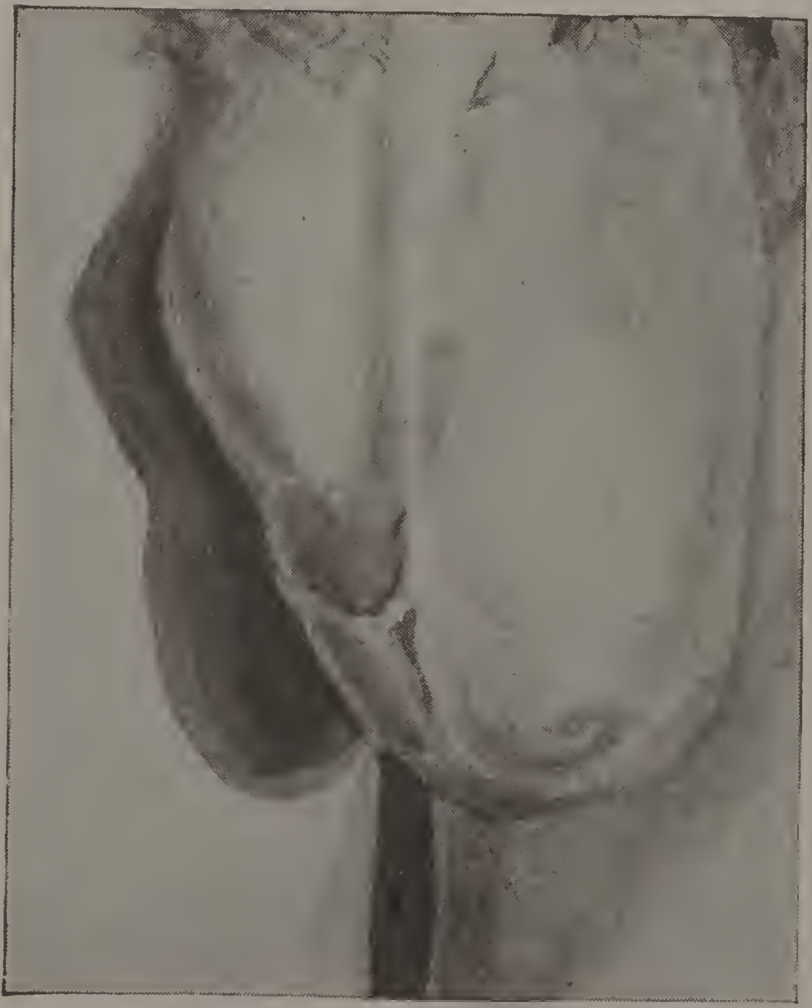
HEMATOCELE.—A swelling caused by an effusion of blood into the sac of the tunica vaginalis, in the spermatic cord, testicle or pelvis, due to a hemorrhage from accidental injury or other cause. Blows, wounds or violent straining may produce it. It is readily distinguished from hydrocele by the fact that it is opaque. (See *Hydrocele.*) The treatment is rest and quiet, with applications of cold. If serious, the patient should recline on the back with hips somewhat raised. Fasting, with the drinking of very little water, is recommended.

HERMAPHRODITISM.—There is a wide-spread delusion among the uninformed that there are occasional individuals, colloquially termed "morphodites," who are half man and half woman, or who are both man and woman in one. A true condition of this kind rarely exists, the so-called hermaphrodite usually being one suffering from a deformity of lack of development of the genitals. There have been cases in which a rudimentary ovary and rudimentary testicle have been found in the same individual, but they are extremely rare, and only a few cases of this kind have ever been reported. Certainly the ovaries and testes in such cases do not functionate. As a rule, the hermaphrodite is a male, though sometimes a female, marked by deformity, sometimes a cleft of the scrotum, hypospadias, epispadias or perhaps a mere lack of development. We should remember that the early development of the external genitalia in the case of both sexes is very much the same, and that up to the tenth week of embryonic life the distinction cannot be discerned. There is a projecting eminence known as the *genital tubercle,* two so-called *genital folds,* and at the sides two *genital swellings.* From these parts the external genitals gradually take form, the genital tubercle growing into the clitoris in the female or into the penis in the male, the genital folds developing into the labia minora in the female, or into the prepuce in the male, and the genital swellings taking form as the labia majora in the female or developing into the sac of the scrotum in the male. Arrested development of the parts, naturally, not unlike that arrested development of the processes of the face which results in hare-lip or cleft-palate (see Vol. IV), will leave them in a condition which may partly resemble both sexes, or which may even make it difficult to determine which sex is actually represented.

It is, therefore, a case of defective development, and the hermaphrodite is usually so deficient in the reproductive function as to be incapable of having offspring. The cause of such arrest of development in the womb cannot be stated definitely, though it may be due to the influence of alcohol, drugs, lead poisoning or anything else which would interfere with perfect nutrition and the normal metabolism necessary to continuous growth and development. If the male hermaphrodite seems effeminate, with a deficient beard and a childish or feminine voice, it is not because he is "half woman" but because he is not strongly developed and is lacking in virility.

The condition is naturally incurable, though a slight deformity like that of hypospadias, mistaken for hermaphroditism, may sometimes be relieved by skillful surgery.

Herpes of the Genitals.—An eruption of vesicles or blisters occurring usually on or about the prepuce, and similar in appearance to herpes zoster or "shingles." (See Vol. IV.) They are the result usually of irritating secretions and usually disappear readily as the result of cleanliness of the parts and improved general health. It is important to give them careful attention, for the same secretions which have produced them may also carry the germs of the more virulent venereal diseases, which, in that case, will develop later.


Hydrocele.—The fluid accumulating in the scrotum in this disease is clear and translucent. The testicle is entirely enveloped or concealed.

Hydrocele.—An enlargement of the testicle produced by an accumulation of more or less clear fluid (serum) in the *tunica vaginalis,* in excess of the normal secretion of this serous sac. It is not usually accompanied by much pain but may grow to such size as to cause great inconvenience. It is not uncommonly congenital, but in later life may develop as the result of accidental injury, gonorrheal infection, obstruction of veins in the abdomen, tuberculosis or a condition of general dropsy. It may have a detrimental effect upon the generative system because of pressure and irritation.

Congenital hydrocele is a condition due to the fact that the tunica vaginalis still communicates with the abdominal cavity, and is in fact a prolongation of the latter. In such a case the swelling naturally disappears when the infant lies on his back, and there is an impulse in coughing. It usually mends of its own accord, though in some cases a truss may be necessary. It may or may not be associated with congenital inguinal hernia. (See *Rupture.*)

Hydrocele in later life is often mistaken for rupture, and sometimes for varicocele. Hydrocele usually forms a smooth, ovoid or pear-shaped swelling, and the testicle is entirely enveloped and concealed. There is no impulse in coughing, as in the case of rupture, and usually hydrocele is translucent, while hernia never is. Hematocele likewise is not translucent. (See *Hematocele.*)

Treatment. If due to general dropsy, or if the condition is known to be the result of any of the other possible causes named above, the treatment should be directed chiefly to the primary disorder. Otherwise, the special suggestions for treatment and the fasting and dietetic regimen advised in Vol. IV under *Hydrocele,* should be followed strictly. Under this regimen tapping or withdrawal of the fluid will not be necessary.

HYPOSPADIAS.—A deformity of the penis in which the opening of the urethra, instead of normally appearing at the extremity of the organ, is found on the under side, usually under the glans or a little farther back. Sometimes it is farther back, and with other deformity of the organ presents an appearance which is sometimes mistakenly referred to as Hermaphroditism (page 2711). There is often an undeveloped condition of the corpus spongiosum. When the opening appears upon the top of the organ, the condition is called epispadias.

There is no treatment for the deformity except in some instances where surgery can overcome the defect. The disorder is apparently due to arrested or impeded development in the formation of the parts, as in the case of cleft-palate or hare-lip.

IMPOTENCE.—A lack of sexual and erectile power in the male, making it impossible for him to perform the procreative act. The weakness may be due to various causes, but most frequently is the result of a decline of the physical powers of the body as a whole. In a large number of cases it is the result of abuses of the sexual system through excesses or masturbation, which have not only impaired the generative organs themselves but have also exhausted the vitality of the body generally. We must remember that though impotence is accompanied by general bodily weakness, it is not the cause but the result of the latter condition. There is always this intimate relation between the vigor of the nervous system and the entire bodily organism on the one hand, and the generative system on the other. Consequently, anything that injuriously affects the general health will also tend to impair one's sexual power. Exhausting fevers, dissipations, chronic alcoholism or other vicious habits, drug habits, sedentary habits, lack of exercise, the breathing of foul air day after day and month after month, constipation, over-study or other overwork, and all other physically destructive influences may in various cases be important factors in causing this condition. Naturally abuses of the marital relation and other excesses are prominent in a large number of cases, though in other instances they may have little or nothing to do with it. Injuries to the spinal cord or brain, locomotor ataxia and other brain or spinal cord diseases may produce a condition of organic impotence, as may also diabetes, tumors or obstructions which interfere with the blood supply. Degenerative processes following or disease of the genitals may have the same effect.

In a large number of cases, however, impotence is *psychic* in character, as when it is due to any one of a number of mental conditions. Embarrassment or nervousness very frequently causes the condition in a temporary form, which may be overcome a little later. The suspicion of sexual incapacity may, through the force of "auto-suggestion," render one actually incapable. Fear, worry, ridicule and all similar influences may be considered in many cases.

Impotence is often confounded with sterility, though the two conditions are essentially different. Impotence has to do with the lack of power to perform the marital act, while sterility has reference to the lack of fertilizing power, even though there be no lack of physical power. Sterility depends upon the lack of semen or the inability to bring the spermatozoa in contact with the ovum. (See *Sterility.*) One may be impotent without being sterile in an organic sense, though impotence would make him practically sterile. And one who is sterile is not necessarily impotent.

Sterilization, in fact, by surgical means, may be accomplished without in the least depriving one of his virility or rendering him impotent. It simply involves the cutting or obstruction of the vasa deferentia, or seminal ducts. It is a practice to be recommended in the case of many hereditary degenerates, mental defectives, born criminals and others whose perpetuation would be a menace to human society. It is practiced by the State authorities in some localities.

The treatment of impotence is naturally suggested by a knowledge of its causes, in most cases. Psychic or false impotence requires mental treatment by means of suggestion, encouragement and reassurance. When there is some radical derangement of the brain or spinal cord, as in locomotor ataxia, the possibilities of a cure may be very doubtful, depending upon the primary disorder. But in most cases, where it is due to the general causes named, a cure depends simply upon the building up of the body as a whole, purifying the blood, increasing the general store of vitality and establishing a normal condition of all parts. "Lost manhood" is to be treated by the building of manhood, and Chapter IX of this volume, following the present one, is devoted to the general subject of virility building. It should be carefully studied. Freedom from the mental suggestion of sexual matters is an important factor of the treatment to be kept in mind.

INFIBULATION.—The practice of passing a ring through the prepuce, in the male, to prevent sexual intercourse. Infibulation was common among the ancients, and was sometimes employed to enforce continence in the case of athletes, who otherwise might waste some of their strength through this channel. The practice is still in vogue among some native tribes of Africa. Infibulation is also sometimes practiced in the female, passing the ring through the labia majora, to insure virginity or chastity until marriage.

MASTURBATION.—(Self-Abuse; Secret Vice.) The self-handling of the genitals is not only one of the most destructive and devitalizing of all practices, but one of the most common among young persons. It is most frequently acquired at about the age of puberty or a little before, though it is sometimes taught to very young children by vicious nurses or depraved older children. It is most frequently learned by association with others who have acquired this habit of self-pollution, but in some instances it is acquired through the excitement of the parts aroused by accidental contact with the boy's own hands. In a considerable number of cases, too, the habit is developed as the result of irritation from unwholesome secretions. (See *Balanitis*, *Phimosis* and *Circumcision*.) Special attention to the cleanliness of the parts is therefore essential.

Masturbation is not infrequently observed even in infancy, and in such cases is invariably due to the irritation from impure secretions which have accumulated through lack of cleanliness, this being true both in male and female infants. In some such cases, circumcision in the case of males, or sometimes an allied operation in the case of females when there is an excessive fold over the clitoris, may be desirable for overcoming the habit, but mere cleanliness is sufficient in most cases. Sometimes the infant will adhere to the habit with such persistency that some form of mechanical restraint will be necessary, tying the hands and otherwise making the practice impossible.

There is no question that the chief cause of masturbation is the ignorance due to prudery. It is claimed that those who are mentally deficient or unsound are especially inclined toward the practice, and that it is often the first symptom of mental derangement, or in other words, that it is in many instances the result rather than the cause of insanity. There is no doubt that this is all true, but at the same time it is true that in most cases it is practiced by those who are entirely normal in all other respects, at least in the beginning. The prudery of parents, their mysterious secrecy upon all subjects related to the reproductive function, and their shirking of their duty to their children in the matter of instruction on sexual hygiene, should be held wholly to blame in the vast majority of cases. This matter, however, has been generally covered in Chapter II of this volume. We must not forget that the irritation and false sexual excitement due to constipation is in many cases an active factor in causing the habit, and in making it difficult to break.

Both mind and body suffer severely from the effects of frequent and long continued masturbation, and it is a question as to which endures the greater injury. Certainly the practice robs one of his manhood and makes him unfit for the duties of life, ending in complete nervous and physical breakdown if persisted in. It causes over-sensitiveness of all the sexual parts, a permanent irritability of the urethra, prostate and other organs, chronic prostatitis, enlargement of the prostate in later life, prostatorrhea, weakness and disease of the bladder, seminal losses on the slightest excitement, chronic spermatorrhea, and a general weakening of the nerves, muscles and all of the structures associated with the generative system. The ultimate result is a condition marked by prematurity or impotence, either partial or complete. The constitutional and mental results are equally disastrous. The eyes are sunken, the skin is pasty, sallow and subject to an excess of pimples, the hand is clammy and grips without energy, the appetite fails, the stomach and bowels lose their functional power, dyspepsia and constipation ensue, the muscles become weak, flabby and shrunken, the very walk, effeminate, timid and uncertain, seems to cry out aloud to proclaim the shame and depravity of the secret practice, the habit which the victim may have thought to be a secret one, but which makes itself known to the experienced eye by every detail of the young man's appearance. The masturbator becomes confused of thought, mentally sluggish and stupid, morbid and melancholy, he becomes shy and lacking in self-confidence, lacking in will-power, lacking in the power of mental concentration, with a memory that fails him on every turn, lacking in ambition and energy, and with a tendency to shun the society of his fellows, and especially that of the opposite sex. Instinctively recognizing his own unfitness, the masturbator sheepishly shrinks from the steadfast gaze of healthy and normal young womanhood. Going from bad to worse, the victim of the vice is subject to a host of the most serious maladies, particularly nervous disorders, hysteria, epilepsy, paralysis, spinal diseases and insanity. In many instances the debilitating habit paves the way for tuberculosis and other wasting diseases which finally carry the pitiful wretch to an untimely grave.

Of course these extreme results do not follow in all cases, or even in half of all cases, but they do follow in a great many instances, while in every case the habit has a similarly destructive effect, depending in extent upon the length of time and frequency with which it is practiced. The victim, frittering away his manhood through this unnatural channel, can never be quite the man he would have been had he lived an entirely clean and normal life, while if he marries, as young men are sometimes advised to do as a means of saving them from themselves, his married life is doomed to be bitterly disappointing, if not humiliating.

Fortunately, if the habit is abandoned before sexual power is lost, the fitness of its victims for parenthood is not lessened, nor does the offspring of one formerly addicted to it suffer physically.

Treatment. In cases of this kind the treatment should have two aims, first to stop the habit and secondly to overcome its injurious results. Being so common it is listed among the general diseases in Volume IV, and the constitutional regimen there outlined should be followed closely. Remember that the building of physical vigor is all important, and that the exercise should be pushed to the point of decided fatigue. An active outdoor life is especially helpful. The mental condition is particularly important. Not only must the mind be actively interested in wholesome things so as to keep it off from sensual and erotic thoughts, but tendencies to worry and despondency must be overcome. Human companionship is most important, and especially that of clean, wholesome members of the other sex. Beyond the outline of treatment given in Volume IV., the general suggestions on virility building in the next chapter should be carefully studied as well as the discussion of Sexual Hygiene in Chapter II of this volume.

Remember that these physical culture methods are wonderfully efficacious, and that although one may not be able to make himself quite the man that he might have been had he not thus abused himself, if he has carried the habit very far, nevertheless by a persistent and faithful struggle to regain his manhood, fighting for months and years for all that is worth while in human life, he will by these physical culture methods be able to develop and retain a satisfactory degree of virility.

NON-SPECIFIC DISEASES.—Inflammatory sexual diseases which are not the result of a specific germ, such as those associated with gonorrhea or syphilis, are sometimes distinguished from these specific diseases by calling them non-specific diseases. They may be propagated by an inoculation of pus from some inflammation or disease of the female organs, but they take the form of a local affection without producing manifestations in the system as a whole. A distinguishing difference between the specific and non-specific diseases is that in the latter there is usually pus at the start, ranging from white to yellow. It is well to be able to recognize the disorder, in either case. Non-specific disease usually takes the form of a simple urethritis, or inflammation of the urethra. (See *Urethritis.*)

There is another common symptom which is not associated with either of the above-mentioned forms of disease, but which often gives much alarm to one who does not understand it. This is the white, stringy discharge sometimes noticed in the urine, which indicates some form of bladder or prostatic trouble, perhaps an inflamed or catarrhal condition of these organs. It is not an evidence of venereal disease in such cases.

PARAPHIMOSIS.—See under *Phimosis.*

PERVERSITY.—(Degeneracy.) The *sexual pervert* is one who seems to find a sexual attraction in another of the same sex, or who at least indulges in an abnormal sexual gratification by means of another of his own sex. The term "degenerate," is also applied in a specific sense to this type of moral monster. "Sexual aberration" is another more delicate term which has sometimes been applied to this form of perversity, which apparently has been known and practiced ever since the earliest historical times.

Sexual excess is doubtless the cause of sexual perversity in practically all cases, though it is thought by some that in some cases it is due to the fact of having been born with a defective sexual organization. Perhaps it may be truly said that they have a defective moral organization, in some instances. And yet persons of great ability and refinement have been known to be perverts. In such cases probably excessive indulgence brings on satiety, so that normal gratification is no longer desirable, and the stimulated, abnormal appetite seeks for extraordinary means of gratification.

There is a great variety of mental and sexual abnormalities classified by students under the head of *phychopathia sexualis,* of which it is unnecessary for us to speak in detail. Masturbation and sexual perversity are the most common of these. There are some who prefer children to adult women as a means of gratification, and others who have reached such a degree of abnormality and degeneracy that they are unable to experience a sense of sexual passion except when it is aroused by a corpse. But practically all of these psychopathic states are the result of a life of excess and abuse of the sexual function. Cocaine, opium, morphine and other drugs, through their demoralizing influence, are responsible for these various forms of degeneracy in many cases. Soldiers, sailors and other bodies of men long absent from the society of women, not infrequently develop sexual perverts among their number. Here again the perversity is only superficial, being due to the inability of satisfying the sexual appetite in a natural manner.

The treatment should be of a nature to bring the individual back to a normal state of body and mind. The body must be strengthened through exercise, cold baths, outdoor life and a general physical culture regimen, and the mind should be interested in wholesome activities in order to avoid sexual subjects and the previous associations. A persistent effort should be made, not only to avoid the hideous and abnormal practices which it is the desire of the victim to forget, but also to live a life of general sexual continence for a prolonged period. As the body becomes vigorous and athletic under the influence of faithful training, the sufferer will find himself returning to a normal state in regard to his sexual instincts and in every other respect. The general regimen advised elsewhere in the treatment of masturbation may be advised in every detail for the reclamation of the pervert. Special study should be given to the general discussion of virility building in the next chapter.

PHIMOSIS.—It sometimes happens that the prepuce or foreskin is too tight, that is to say, constricted or narrowed at the extremity, making it impossible to bring the fold of skin back to uncover the glans. This condition, when it exists, is most frequently congenital, though it is occasionally acquired as the result of disease or injury of the prepuce. When congenital the prepuce is sometimes found to adhere to the glans as well as being too tight. Sometimes the opening is as small as a pinhole, causing difficulty in urination, with distention of the prepuce with urine at the same time. In such a case, adhesion of the parts may even close up the opening, requiring immediate and radical treatment. Phimosis tends generally to restrict the growth of the penis, besides causing irritation and inflammation. This may further lead to other disturbances, sexual excitement and unnatural practices.

Treatment of Phimosis. Circumcision is invariably advised as the best and most unfailing treatment for phimosis, and I would recommend that it be performed in early infancy if it is extreme. Circumcision may not be necessary in all cases, but even in a moderate case will do no harm and will afford an effective remedy. (See *Circumcision.*)

In many moderate cases dilatation of the prepuce may be sufficient, though means of cleansing the inner surface of the prepuce, the cervix, corona and glans must be found. This may be accomplished by means of a small penile syringe, the mouth of which is placed within the orifice of the prepuce so that water may be forced into the cavity between the glans and prepuce. Holding the orifice tight over the end of the syringe, an injection of warm soapy water should first be made, followed by two or three injections of clear water or boric acid for thorough rinsing. This cleansing treatment offers at the same time what is perhaps the best method of dilatation of the part, for the body of water forced into the cavity of the prepuce will accomplish the result without irritation or injury of any tissue. It will expand the part with an even pressure throughout. In all cases where the glans cannot be uncovered and thoroughly washed, this method should be used daily or more often until circumcision has been performed, or until the condition has been outgrown through constant dilating.

This method of treatment with a syringe should especially be used when there is an adhesion of the prepuce to the glans in addition to the phimosis. Even if an operation is intended, it is well to overcome the adhesion by the practice of this method for some time before performing it. The parts will then be somewhat stretched and elastic, the operation easier and the results much better. In some cases there is an adhesion of the prepuce to the glans when there is no phimosis, and in such instances, also, this syringe treatment is recommended. Mere traction backward, while rubbing in olive oil, may be used, but there is a more evenly distributed pull from the pressure of the water, and less chance of tearing the tissues, when the syringe and water or boric acid are used.

Paraphimosis is a serious condition which may result from phimosis. It is a condition of strangulation of the organ back of the corona, which results when the glans has been forced through the very narrow orifice of the prepuce. That part of the fold of skin which has formed the orifice now forms a tight ring or band around the organ, having the same effect as any ligature in shutting off the circulation in the extremity of the organ. The glans becomes congested, inflamed and swollen, the prepuce overhangs it like a swollen ring, while behind is the tight band of the constricting part, as described. Unless the glans can be forced back, the result will be ulceration and sloughing in the course of some days. It can usually be reduced in the early stages by oiling the parts well with olive oil, then drawing the prepuce forward while compressing the glans with the thumbs. It may be necessary to compress the glans by a very small bandage, tightly applied, in order to get the prepuce back over it. If reduction cannot be accomplished in a day or so surgical help should be obtained without further delay.

PIMPLES ON GENITALS.—The appearance of pimples or vesicles of any kind upon the generative parts should be given immediate and careful attention. Although an eruption of this kind may be simply a case of *herpes* of the genitals (which see), or perhaps a harmless, ordinary pimple, still in other cases it may mean syphilitic infection or the appearance of a chancroid.

POSTHITIS.—Inflammation of the prepuce. (See *Balanitis.*)

PREMATURITY.—A term commonly applied to the premature ejaculation of semen during attempted intercourse. It is a condition approaching impotence, and is sometimes referred to technically as *irritable impotence.* It is the result of the weakness of the nerves and muscles due to sexual excesses or masturbation. Not only may the discharge of the seminal secretion take place too soon during the act of coition, but in some cases it may even take place at the very beginning of the attempted act, or during the anticipation of it. When the weakness is extreme, such emission may take place as the result of the mere presence of a female companion. Needless to say, the condition is one that may occasion extreme humiliation. Unusual nervousness may sometimes induce temporary prematurity in an otherwise healthy man.

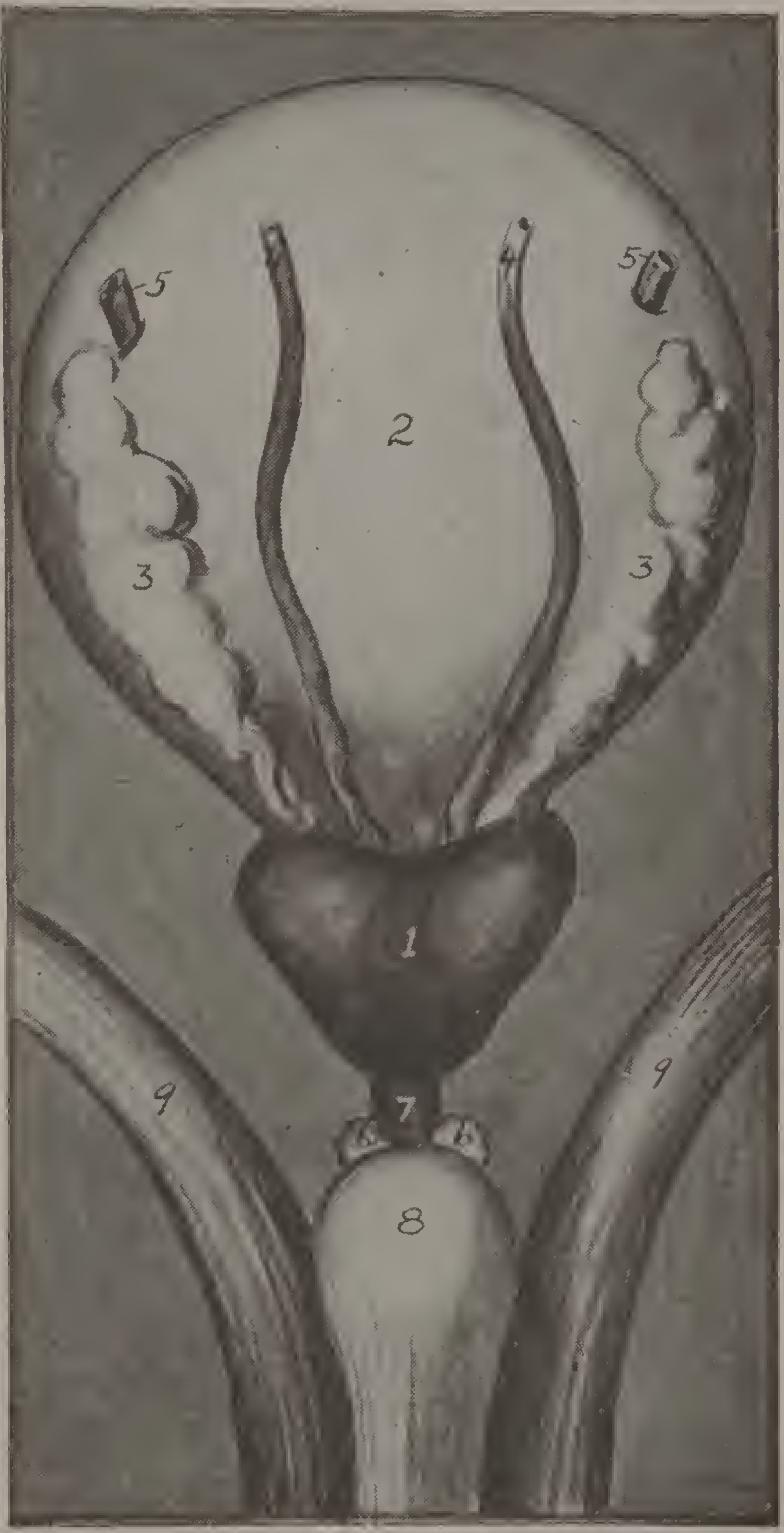
The treatment should be the same as in a case of partial impotence, requiring all constitutional measures for building up the nervous system and all around bodily vigor. Cold sitz baths and exercise are especially important, and the general suggestions for virility building given in the next chapter should be carefully studied. Freedom from indulgence is most important, and if strict continence can be observed for a couple of years or longer, in connection with the general physical improvement, it will prove of inestimable advantage.

Priapism.—A disorder marked by a state of persistent erection of the male generative organ. It may or may not be attended by sexual desire, and is usually due either to some form of irritation, perhaps from local secretions, or to some abnormal nervous condition. (See also *Satyriasis.*)

Treatment should first of all require a search for the cause of the disorder, and if this is found in irritating secretions or local inflammations, special treatment should be adopted accordingly. *Chordee,* an erected condition marked by a downward curve, is a symptom of gonorrhea and is referred to in the discussion of that disease.

In any case, constitutional treatment is essential, with care to avoid sexual excitment and erotic thoughts or literature. If the trouble seems to be of nervous origin, the constitutional treatment will be especially necessary, and cold applications to the upper spine will be very effective in overcoming the excited condition of the parts. Local cold applications and cold sitz baths will likewise be of great value, but they must be of sufficient duration. Cold applications applied for a short time have a stimulating effect, but if prolonged they will overcome the excitement. Tightly fitting and warm clothing should be avoided.

Prostate Gland, Enlargement.—Enlargement or hypertrophy of the prostate is a not infrequent disorder of men beyond middle age, usually beyond the age of sixty. It may be the result of chronic inflammation of the prostate in earlier life, irritation produced by constipation or other debilitating influences which tend to cause congestion of the gland. The enlargement comes about so slowly that it may not be noticed until it has progressed to a considerable extent, causing greater frequency or urination. In some cases it interferes more or less seriously with the passage of water, and sometimes there is pain. It is chiefly serious when it is complicated with inflammation of the bladder, in which case there is mucus or pus in the urine. It may affect one lobe, or the entire gland. The condition is definitely determined by digital examination *via* rectum.



The Bladder and Prostate Gland.

1. Prostate.
2. Bladder.
3. Seminal vesicles.
4. Spermatic ducts.
5. Ureters.
6. Cowper's glands.
7. Membranous urethra.
8. Bulbous urethra.
9. Cavernous bodies of penis.

Treatment should be almost entirely constitutional. If there is evidence of cystitis or inflammation of the bladder, the attention should be directed especially to the latter condition. Otherwise, rest, outdoor air, diet and hydrotherapeutic measures should be depended upon. Moderately short fasts will be of the very greatest benefit, if the condition of the patient in respect to weight and strength is such as to warrant them, and cold wet cloths should be applied at night to the perineum and pelvic region. Otherwise the general suggestions in the way of constitutional treatment for chronic prostatitis should be followed, adapted to the strength of the individual.

PROSTATE GLAND, INFLAMMATION.—(Prostatitis.) Prostatitis may be either acute or chronic. As shown in the illustration on page 2725, the prostate gland is situated at the base of the bladder. It entirely surrounds the ureters, and when inflamed or swollen it seriously interferes with the excretion of urine. Prostatitis, as inflammation of the prostate gland is termed by medical men, is a distressing and painful ailment, but with proper treatment beneficial results may be anticipated in nearly all cases. It is absolutely essential that no stimulating foods or drinks of any sort be indulged in by the sufferer from disorders of this gland, and equally important that every form of sexual excitement be avoided. This gland is particularly susceptible to changes of a structural sort, or to any lesions of the genito-urinary tract, brought about by disease or accident.

Acute prostatitis is usually due to gonorrheal infection, rarely to some other infection from instruments or from the lower bowel. An injury may be the cause, but usually only when followed by some infection.

In acute prostatitis there is a frequent desire to urinate, with a feeling of pressure in the region of the bladder. There is a painful, scalding sensation when urinating which gradually increases in severity. The prostate is swollen and so tender that evacuation of the bowels may be very painful. There may be backache. If the swelling is marked there may be retention of urine, and especially if there is suppuration, as sometimes happens. If such an abscess forms, the condition is very serious. Acute prostatitis is accompanied by unusual nervous depression, more or less fever and a general constitutional disturbance. There may be blood in the urine if the inflammation is severe. Digital examination through the rectum reveals the enlargement and tenderness of the gland. Unless satisfactorily treated, the disorder is likely to leave the organ in an injured condition, perhaps leading to enlargement later on.

Chronic prostatitis may follow an acute attack in which there is gonorrheal infection, or it may develop from repeated congestion of the gland due to frequent sexual excitement, retention of semen in incompleted sexual intercourse, irritating injections, stricture, hemorrhoids, stones in the bladder or other locally exciting or disturbing influence. The symptoms are similar to those of acute prostatitis, except that they are mild, perhaps without enlargement of the gland and little pain. There may be dull pains extending to the back and thighs, and a slight pain after urinating. The urine may be slightly cloudy from mucus or catarrhal discharges from the prostatic urethra. There is a periodic discharge of a viscid fluid, varying in quantity, which has sometimes been called *prostatorrhea.* This is particularly noticeable after defecation, especially if one is constipated, and is sometimes in evidence after urinating. There is no fever in chronic prostatitis, but there is usually much mental depression, the patient morbidly keeping his mind upon his troubles, and magnifying their seriousness. It frequently leads to neurasthenia.

Treatment. Under the heading of *Prostatitis,* in Volume IV, I have outlined a dietetic and general constitutional treatment for acute inflammation of the prostate which should be closely followed. In a very severe case, however, the patient should not attempt to move about, but should recline on his back with the hips raised upon a pillow to avoid congestion or an excess of blood in the part. Instead of the sitz baths, in such a case, hot cloths should be applied at the perineum and over the abdomen. The hot enemas and water drinking are very important. If the urine cannot be passed, a catheter (a tube for drawing off urine) must be employed in skilled hands. If a prostatic abscess develops it is not advisable to wait too long for its bursting, but it should be incised.

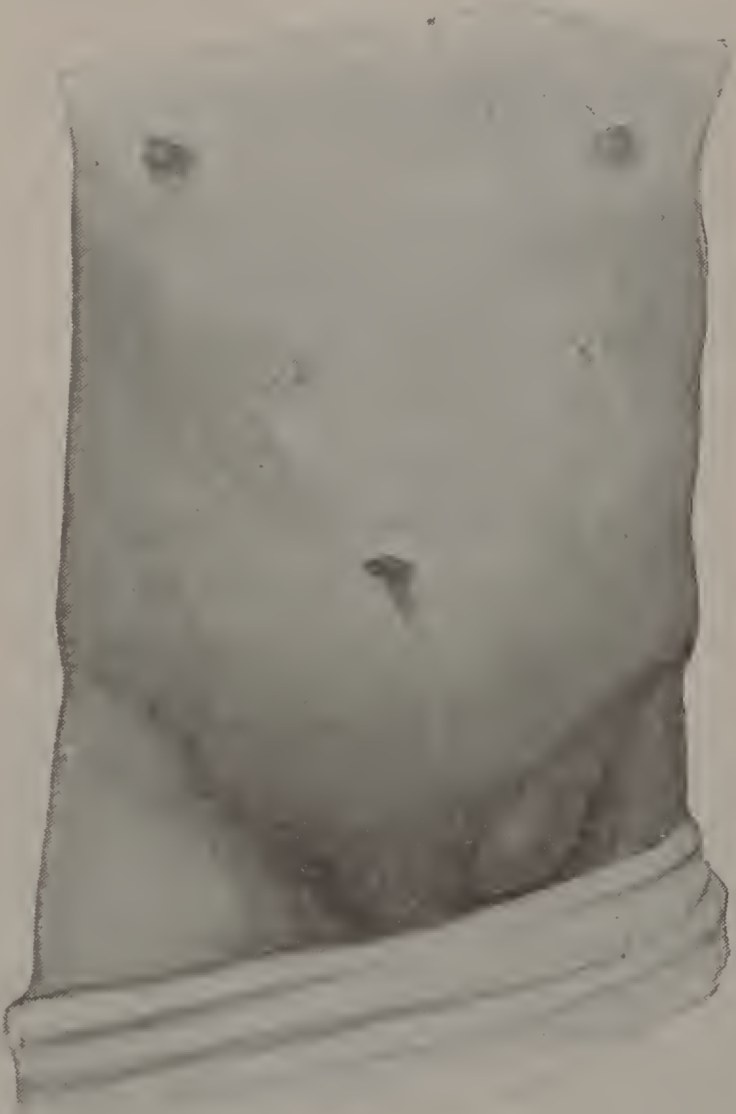
In *chronic* cases the chief aim should be vitality building with special attention to the need for avoiding sexual excitement or erotic thoughts. If the sufferer from this disorder persists in his erotomania or frequent sexual indulgence, it will be impossible to bring about a cure by any means. Cold sitz baths either once or twice each day are particularly valuable in chronic prostatitis. Physcultopathic Treatments F and G may be especially recommended with the use of cold wet towels applied to the upper spine instead of the hot towels ordinarily advised with Treatment F. Outdoor air and exercise, plenty of sleep, a non-stimulating diet, light clothing to keep the body cool and frequent air baths are all important factors in the treatment.

PROSTATORRHEA.—See *Chronic Prostatitis,* under *Prostate Gland, Inflammation.*

RUPTURE OR HERNIA.—The general causes of rupture, or hernia, with a consideration of the nature of the disorder, are given briefly in Volume IV. *Hernia* is the proper term, but *rupture* is the more popular name. It is not strictly a bursting of the part, as the name would suggest, but a protrusion of an internal organ or tissue from the cavity where it belongs by breaking through the wall which normally contains it. It refers most commonly to a protrusion of a part of the intestines through the walls of the abdomen. When these walls are in a weakened and relaxed state, a hernia may develop very readily, or may be induced suddenly by strain, violent muscular exertion, heavy lifting, coughing, sneezing or other causes. In nearly all cases, however, there is the predisposing cause of weakness of the parts. The lining membrane of the abdomen, the peritoneum, is naturally pushed through the opening, forming a pouch or sac which encloses the projecting bowel or other part. A part of the ileum is most frequently involved, and in extent the hernia may vary from a small part of a single loop to several coils of the intestines. In a case of long standing the difficulty may be greatly aggravated by adhesions of the portion of the peritoneum involved and by the formation of fibrous tissue, all tending to prevent the ready return of the parts to their normal positions. Men, as a rule, are far more subject to rupture than women, in a proportion of something like five to one.

Reducible hernia is one in which the protruding part can be readily pushed back into the cavity from which it came. *Irreducible hernia* is so called when the protruding bowel cannot be so returned to its proper place.

Strangulated hernia takes place when the bowel at the point where it passes through the walls of the abdomen, is so constricted or strangled that the contents cannot pass through and the circulation is stopped. Naturally this occurs when the opening is a narrow one. It may occur in some instances when a person has worn a truss for some time, and leaving it off suddenly makes a violent exertion, forcing a part of the intestine through the narrow aperture. In case of such strangulation and obstruction of the intestine, there is colicky pain, flatulence, a sense of tightness across the abdomen, vomiting and a desire to evacuate without the ability to do so. In vomiting under such conditions, first the contents of the stomach are raised, then mucus and bile, and lastly fecal matter which



External appearance of inguinal rupture in the male.

is unable to pass from the body by way of the bowels. The neck of the hernial sac becomes swollen, tender and painful, followed soon by mortification, and, unless radical treatment is immediately adopted, by fatal results. For treatment see Volume IV, under *Rupture.*

Varieties of hernia. Ruptures may occur in different places and are named accordingly, inguinal hernia, scrotal hernia, femoral hernia, umbilical hernia and ventral hernia. These may all be recognized by an external swelling of the affected part which is often increased by standing. The swelling takes the form of a tumor which may disappear under pressure, and which may disappear when lying on the back. Coughing will cause an outward pressure or impulse that may be felt by the hand. The condition may be painless at first, or there may be pain on walking or exertion.

Rupture in infancy is especially considered in Chapter VI of this volume, also in Volume IV under the head of *Navel Diseases.*

Inguinal hernia is the most common of all forms of rupture, being said to number about three-fourths of all cases, chiefly in males. It is more frequently found on the right side. In this type of rupture the bowel protrudes at the groin, having broken through the so-called inguinal rings. This inguinal canal, it should be remembered, with its internal ring and external ring, is the opening in the abdominal wall through which passes, in the male, the spermatic cord containing the vas deferens, blood-vessels and nerves, and in the female, the round ligament of the womb. The internal and external rings are composed of connective tissue fibers, supported by muscular fibers, and the inguinal canal in the adult is about one and a half inches in length on the average. It is through this opening that the testis descends from the abdominal cavity into the scrotum about a month before birth, and it is said that in some instances it does not properly close up thereafter. In such a case it is thought that one is more likely to sustain a rupture.

However, here, as in other cases, a condition of weakness and laxity of tissues is really the predisposing cause of the disorder. Muscular vigor, good nutrition and good circulation are essential to support and build up the fibrous tissues of the abdominal rings. Furthermore, in a normal condition the inguinal canal passes through the abdominal wall obliquely, so that internal pressure would tend to keep the opening pretty well closed and the abdominal contents enclosed. Sneezing, coughing, or strain from muscular exertion, also, would under such circumstances only hold the canal more securely closed. A normal development of the muscles and all surrounding parts, therefore, would make this or any other form of rupture practically impossible. The disorder is very seldom met with among gymnasts or athletes, or even among contortionists.

The treatment, therefore, will naturally depend chiefly upon strengthening and building up the parts, although a well-fitting truss should be used to keep the hernia from protruding, especially during exercise. Strangulation is more likely to occur in inguinal hernia than in the other forms, and it should not be neglected on this account. The treatment outlined under *Rupture* in Volume IV will prove remarkably effective in every case where it is closely followed, paying careful attention both to the exercises and the general dietetic regimen suggested. Practically all cases can be readily and permanently cured by these natural methods. In exceptional instances, where the hernia is exceedingly large, of very long duration, and complicated by adhesions and growths of fibrous tissue, an operation may be necessary to secure radical results, though in such cases these same building-up and strengthening measures should also be employed to establish a normal and vigorous condition of the parts and to prevent future trouble of the same kind.

The *truss* is an important matter, both as to form and fit. It usually consists of a steel band which partly encircles the body, a pad fitting over the hernial opening to prevent any protrusion and a strap to hold the device in position. A certain amount of flexibility is necessary. It is well to remember to have only sufficient pressure to keep the parts in position, for too much pressure interferes with the circulation and is generally detrimental to the tissues. In fitting the truss one should move and bend the body in various directions, forward and backward, stooping down, crossing the legs, placing feet wide apart and also coughing, to make sure that it fits and is properly adjusted. Do not buy a cheap, advertised truss. Go to a surgical instrument house, and be especially fitted.

Before putting on the truss the patient should assume a recumbent position and reduce the hernia. A truss pressing on the protruding hernia does much harm and no good whatever.

Scrotal hernia is a form of inguinal hernia in which the protrusion takes a course under the skin downward into the scrotum. It may usually be reduced by so-called taxis, or manipulation, the patient lying on the back with the hips elevated, and should be treated in very much the same way as any other inguinal rupture, following the suggestions for treatment outlined in Volume IV. Special care should be taken to have a properly fitting truss in a case of this kind. Cold sitz baths are also valuable in the treatment of scrotal herniæ, giving tonicity to the tissues of the scrotum and invigorating all tissues generally.

A scrotal hernia may resemble a hydrocele. It is distinguished by its wider neck, by its reducibility, by the presence of an impulse, by its doughy feel and by its opacity.

A *direct inguinal hernia,* so-called, is one that does not pass through the inguinal canal itself, but protrudes through the walls directly at the external ring. The treatment should be the same as for ordinary inguinal hernia, though the remedial influence of exercise here is even more immediate and effective as a rule.

Femoral hernia involves the protrusion of the bowel through the femoral canal, passing behind or under Poupart's ligament and forming a swelling or tumor at the forward upper part of the thigh. Femoral hernia is usually found in women, rarely in men, and in frequency of occurrence does not even approach inguinal hernia. Corset wearing, tight skirt bands and heavy skirts are predisposing and also active factors in its causation. Poupart's ligament is formed by the blending and interweaving of the lower portions of the internal and external oblique muscles. When these muscles and other adjoining tissues are properly built up there is no danger or possibility of rupture here. The exercises and general treatment for *Rupture* in Volume IV, therefore, will completely remedy the disorder in a case of this kind. The exercises should naturally be adapted to the strength of the individual. It may usually be reduced by lying on the back, clasping the hands over the knee of the same side, pulling the thigh up firmly against the abdomen and then across the abdomen. A suitable truss should be provided and one should guard against the possibility of strangulation.

Umbilical hernia is a protrusion of the intestine at the umbilicus or navel. It is not uncommon among new-born infants, since the entrance of the umbilical cord at this point makes this a compartively weak spot, even after the cord has dried up and dropped off. Even a normally strong child, by violent crying, may produce a rupture at this point during the first two or three weeks, though weaker infants are more susceptible as a rule. Constriction of the abdomen by tight belly-bands, put on by careless nurses, or put on tightly through intention for the sake of "supporting the abdomen," are a common cause of umbilical hernia in infancy. The treatment, of a simple mechanical nature, is described and illustrated in Chapter VI of this volume. Strangulation, though possible and very dangerous in this form of hernia, does not often occur.

Umbilical hernia is also found occasionally as the result of pregnancy in fleshy women who have previously had many children. Repeated pregnancy should have no deleterious effect upon a healthy, normal and properly developed woman, but in one who is weak, muscularly undeveloped and characterized by laxity of tissues generally, repeated child-bearing has an undoubted influence in increasing this laxity of tissues. However, even at that one will seldom find an umbilical hernia except in one who is fat. The treatment, in addition to the exercises and general measures necessary in the treatment of any kind of hernia, should include a special regimen for reducing flesh. (See *Obesity,* Volume IV.) A fast would undoubtedly be desirable, with plenty of exercise for removing the superfluous flesh from the stomach and waist line. A suitable protection in the way of a truss should be maintained in the meantime. The rupture should be attended to as soon as possible after its discovery, for the sooner it is taken in hand, the easier and quicker the cure. In most cases the methods already referred to for the treatment of umbilical hernia in infancy will be effective among adults, though in the latter case combined with exercise and a general regimen. The exercises illustrated in Volume IV are more particularly designed for remedying inguinal and femoral herniæ. They are also useful in cases of umbilical hernia, but should be supplemented by other exercises which involve the muscles of the waist line and the upper stomach region. Lying on the back and raising head and shoulders, or, if strong enough, rising to sitting position, meanwhile supporting the navel with the hand, even if a truss or other protection is used, will be very valuable in this connection. Twisting the body at the waist line and bending far backward and forward when standing, should also be practiced diligently.

Ventral hernia is one which occurs at some other part of the abdomen than those already described, usually in the middle line of the abdomen and most frequently above the navel, or somewhere between the navel and the end of the breastbone. They are sometimes found in infants. (See *Rupture in Infancy,* Chapter VI, this volume.) The treatment should be generally similar to that for umbilical hernia, involving mechanical support and exercise to thicken and strengthen the abdominal walls and thus close up the opening.

Operations which require the opening of the abdominal cavity are frequently followed by hernia, as one might naturally expect. According to authorities, rupture follows at least ten per cent. of all abdominal operations, and these are among the more difficult to remedy, in some cases because of intestinal adhesions. For this reason they should be taken care of as soon as discovered, with proper support and a strict course of exercise for building up and strengthening all the tissues involved.

Congenital hernia is considered under *Rupture in Infancy,* in Chapter VI of this volume.

An important consideration in the treatment of any form of rupture is regularity of the bowels. Constipation is in many cases a strong factor in causing disorders of this type and always aggravates them seriously. Straining at stool is dangerous under such circumstances, and if a normal passage cannot be secured without such straining it will be well to take a small rectal enema, or, if necessary, a full enema. Attention should be given to the discussion of *Constipation* and its treatment in Volume IV.

SATYRIASIS.—A disorder manifested by an unusual and uncontrollable sexual desire, similar to the disorder among women known as nymphomania. It may be due in some cases to disease of the prostate or to other inflammatory conditions of the generative system, or it may be only a symptom of some disease of the brain or nervous system, being in such cases almost a form of insanity.

The treatment will naturally have to do with the local inflammation or disease, when the disorder arises from such causes, but when it is a manifestation of some affection of the cerebellum or nervous system, a radical constitutional regimen for improving the general health and strengthening the nervous system will be necessary. Cold sitz baths and outdoor life, with lots of appropriate exercise and change of scene will be of great value. Hot spinal packs in connection with Physcultopathic Treatments E, F or G will be of great value. Beyond these suggestions a general vitality-building regimen should be adopted. Freedom from sexual excitement is important. See suggestions on building virility in the next chapter.

SEMINAL LOSSES.—(Spermatorrhea; Nocturnal Losses, etc.) There is a great deal of misunderstanding in the popular mind upon the subject of seminal losses, and the false, misleading literature of quack doctors is largely responsible for it. Everywhere these charlatans have been busy circulating pamphlets designed to frighten young men into the belief that they are the victims of destructive maladies which threaten them with the loss of their manhood. One should, therefore, learn to distinguish between comparatively harmless symptoms and those which mean a serious loss of vitality.

Nocturnal Losses. Involuntary emissions of semen at night, usually associated with erotic dreams, are only pathological and harmful when they occur too often. If they do not occur more frequently than once in two or three weeks, and if the individual is vigorous and does not experience any weakening after-effects, then there is nothing to worry about. The majority of strong and full-blooded young men have experienced these losses during sleep at some time or other. Some authorities consider that they merely represent Nature's method of disposing of excessive secretions, but though this may be disputed, and though it may be true that there is no real necessity for such losses in a healthy state, yet it is also certain that under such circumstances no appreciable harm is done. But when these discharges take place as often as twice a week, or every night, then the condition is one that requires special attention, for there will inevitably be a loss of strength and nerve-force, leaving the victim weak and irritable, and gradually undermining his constitution. The organism may in some cases become so weakened and disordered that similar losses may occur in the day time, perhaps with little or no provocation, or even unconsciously. The mere proximity to, or conversation with, a young woman may in such cases provoke an emission.

Normally, any form of sexual excitement, either mental or physical, may stimulate voluptuous sensations with the possible result of an emission during sleep. But frequent and persistent nocturnal losses are invariably the result of sexual excesses, masturbation, indulgence at an early age, too stimulating a diet, or some other form of irritation or sexual excitement. If one who has been accustomed to the practice of masturbation suddenly discontinues the habit, he is almost certain to experience nocturnal losses for a time. His system has been accustomed to the forced secretion of an unusually large amount of the vital fluid, because of its repeated discharge, and continuing the secretion, its stimulation takes this form until the organism is adjusted to the normal course of life. Those who have been married, or who have in any other way been accustomed to frequent indulgence, upon being deprived of the accustomed outlet, are likewise subject to nocturnal losses for a time.

Spermatorrhea. In the specific sense, spermatorrhea has reference to the gradual loss or leakage of the seminal fluid, as distinguished from the full emissions experienced in nocturnal losses. Spermatorrhea is often compared to the condition of a leaky faucet, being an unconscious and more or less continuous oozing out of the semen, due to the weakness of the glands, nerves and muscles of the generative system. This is manifested either by a slight urethral discharge of a viscid character, consisting of semen mixed with mucus, and causing a moistening of the extremity of the organ, or by the presence of the seminal secretion in the urine, or perhaps by both.

The possibility of mistaken diagnosis, however, is an important point to be kept in mind. Remember that the actual presence of spermatozoa must be established for a proper diagnosis, and that this requires the aid of a microscope. There are not so many cases of true spermatorrhea as the reading of quack literature would mislead one to believe. When there is a moistening of the mouth of the urethra from viscid discharges, it is always more likely that the condition represents a catarrhal condition of the bladder, or possibly of the urethra, or that it is simply a case of *prostatorrhea,* due to a chronic state of congestion or mild inflammation of the prostate gland. (See Chronic Prostatitis, under *Prostate Gland, Inflammation.*) As for spermatozoa found in the urine, it may be said that their occasional presence there indicates nothing, probably following sexual indulgence, nocturnal losses or sexual excitement, when it would be only natural to find them. If repeatedly found, however, they would indicate spermatorrhea. Supposed semen in the urine may naturally be nothing more than a catarrhal discharge in some cases.

Spermatorrhea may in occasional instances be the result of injury, affections of the brain or spinal cord, or disease of the prostate, seminal vesicles or ejaculatory ducts, but usually the incidental weakness of the nerves and muscles of these parts is the result of masturbation. The victim of spermatorrhea suffers from all-around physical debility, impaired digestion, irritability and mental depression, inability to sleep and the other general symptoms of neurasthenia.

Treatment. Constitutional measures are all important in the treatment of both spermatorrhea and excessive nocturnal losses, with special attention to exercise, the use of cold water and care to avoid sexual excitement. The general regimen and special suggestions given in Volume IV under *Seminal Losses* should be followed closely. Inasmuch as sleeping on the back is unfavorable, it is well to tie a large spool or other object to the back, so that it will check any inclination to turn over on the back during sleep. A hard bed is always preferable.

SEMINAL VESICLES, INFLAMMATION.—(Seminal Vesiculitis.) This is the result of gonorrheal infection, and is invariably accompanied by prostatitis. The symptoms are very generally the same as in a simple case of inflamed prostate, though when the latter is involved to a less serious extent the symptoms are less painful, and there is not so much interference with urination. The anatomic structure of the seminal vesicles is such that they readily retain the gonorrheal infection for years, even after the active inflammation has subsided. For this reason there is all the greater need for an active vigorous life after recovering from a case of gonorrhea, with outdoor living, a wholesome, non-stimulating diet, and all other observances of the requirements of health.

The treatment must be constitutional in nature, including water drinking, fasting and a subsequently low diet, means to insure regularity of the bowels, hot sitz baths, and the other general measures advised in Volume IV for acute prostatitis.

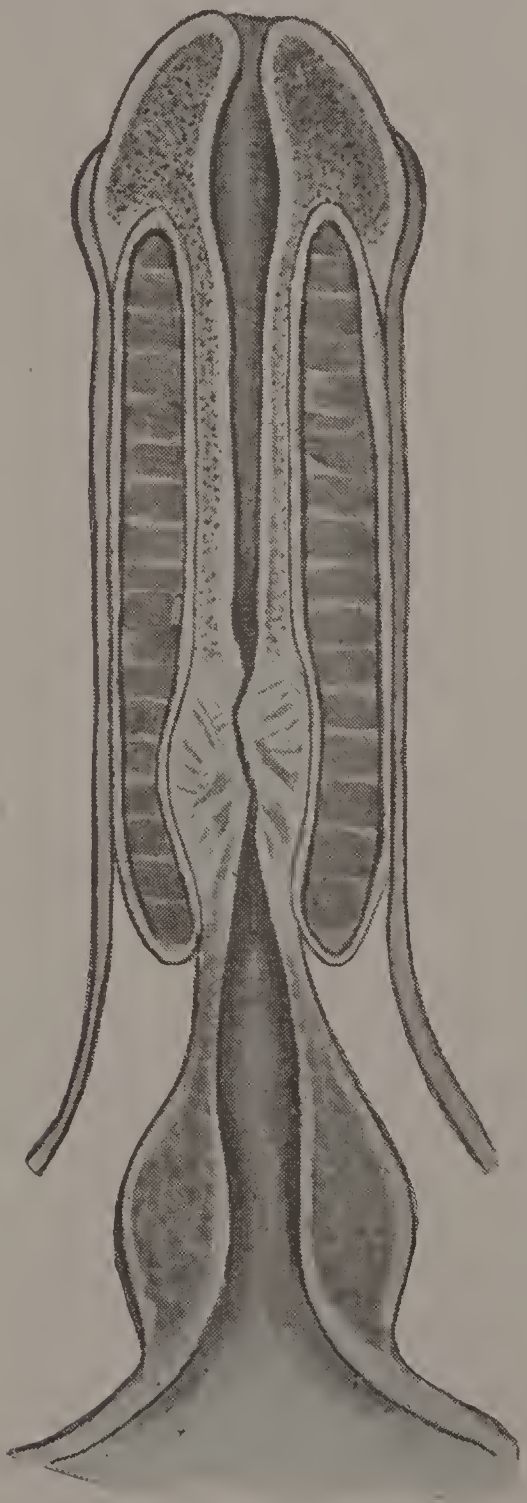
SEMINURIA.—The presence of semen in the urine. See Spermatorrhea, under *Seminal Losses.*

SHRUNKEN ORGANS.—See *Undeveloped Organs,* and *Testicles, Swelling of.*

STERILITY.—The lack of fertilizing ability, which may or may not be accompanied by impotence. (See *Impotence.*) Sterility essentially consists in a lack of the seminal fluid, or if there is a secretion, in the absence of the spermatozoa or their lack of vitality. Gonorrhea is one of the most active causes of sterility among men, chiefly accomplished, in this disease, through the influence of the inflammation in obstructing and permanently closing the fine convoluted tube of the epididymis on each side. Inflammation and infection of the seminal vesicles and prostate gland may produce poisons which either destroy the spermatozoa or deprive them of functional power. Any condition which mechanically prevents the spermatozoa from reaching the ovum, will result in sterility, and consequently impotence means practical sterility. Conditions of general exhaustion or lowered vitality, imperfectly developed or diseased testicles, injury of the glands, and sometimes diseases of the brain and spinal cord, all may cause sterility. In a large number of cases it is a result of the depleted vitality due to masturbation or sexual excesses. Drug habits, alcohol and strong medicines are sometimes to blame.

Treatment, in each case, should be determined by a consideration of the causes if they can be ascertained. If sterility is due to a radical structural change in the organism which mechanically prevents the passage of semen, then the case is hopeless. In practically all other cases, however, the capacity for fertilization may be restored by building up the vitality of the body as a whole, and by eradicating all traces of inflammation or venereal disease. If there is any tendency toward impotence it will be necessary to follow rigidly the suggestions in the next chapter for building a high degree of virility.

STRICTURE OF THE URETHRA.—This is an abnormal narrowing or constriction of the urethral canal, interfering with or obstructing the flow of urine. It may be inflammatory, spasmodic or organic in nature. *Inflammatory stricture* is a natural result of such swelling as will tend temporarily to close or partially close the canal, and, as a rule, is readily overcome by proper treatment. *Spasmodic stricture* is largely a nervous disorder, in which irritation of one kind or another produces muscular spasm, so constricting the canal. *Organic stricture* is the outcome usually of inflammatory stricture, and takes the form of radical and usually more or less permanent alteration in the structure of the canal. It may be due to deposits of foreign matter, to pressure from tumors or growths adjacent to the urethra, to injuries, or to the results of strong chemicals used in connection with injections.


Stricture.—Illustrating the manner in which the walls of the urethra become thickened.

Stricture is one of the most troublesome and persistent consequences of gonorrhea, being in a large number of cases the most active factor in the causation of gleet. (See *Gleet.*) Stricture and gleet are usually twin affections. Stricture may also be the result of sexual excesses, masturbation, rough usage of the organ, or long retention of the urine. If long congested or inflamed the mucous membrane of the urethra becomes thickened and less elastic, the submucous tissues also swelling and pressing upon the canal. In consequence of the obstruction to the urine, and the resulting failure entirely to empty the bladder, there is a frequent or constant desire to urinate. This retention of the urine may also produce serious trouble of the bladder or chronic prostatitis. Urination may be painful. The stream is usually narrowed or twisted.

Stricture may give rise to very serious results, sometimes fatal. Besides inflammation of the prostate, seminal vesicles, bladder and kidneys, it may cause a rupture of the urethra with extravasation of urine and even of pus. Abscess or fistula may follow. Hemorrhage and general blood infection may result.

Treatment. Above all things, the patient should not experiment upon himself. The attempt to use instruments upon himself is highly dangerous, and may bring about fatal complications. Instruments are bad enough in this disorder even when employed in the most skilled hands. Sounds (metal probes), caustics and bougies (flexible probes) are generally useless and dangerous. Remedies advertised to cure stricture by dissolving it should be avoided.

Constitutional treatment is the essential factor in remedying this disorder, and it should be devoted especially to the cure of gonorrhea if that disease is the cause of it. Perhaps most important of all is the drinking of a large amount of water to modify the character of the urine, diluting it and making it less irritating. This is especially important if there is gonorrheal infection, and in cases of spasmodic stricture in which gout, rheumatism, fever or some other constitutional condition has caused a highly acid and therefore very irritating condition of the urine. The bowels should be thoroughly emptied by means of enemas. It would also be well to drink daily a glass of water containing a tablespoonful of common salt dissolved in it, as a laxative. Every effort must be made to purify the blood, the patient should live a sober and simple life, and his diet must be of a non-stimulating nature.

If the symptoms are acute, in cases of inflammatory or spasmodic stricture, a fast of a few days will be almost imperative, observing Fasting Regimen No. 3, and followed by Breaking-Fast Regimen No. 16. In all cases local wet packs are advised, hot if there is much pain, otherwise cold. In organic stricture, the object should be to promote the absorption of foreign deposits, or growths. Hence the need for the constitutional measures suggested and general vitality-building treatment. Surgery may be necessary in rare cases.

SUSPENSORIES.—While the use of appliances of this nature may be useful in cases of injury or an abnormal condition of the organs, it is well to dispense with their use in every instance when the parts are in normal condition, as will always be the case when a robust condition of the general health is maintained.

SWELLINGS, GENITAL.—Swellings of the generative organs or regions may be due to several causes.

Swellings in the groin may indicate either a hernia or a bubo, especially the latter when there is inflammation and much pain. (See *Rupture* and *Bubo.*)

Swellings of the scrotum may result from rupture, from varicocele, from inflammation of the testicles (orchitis or epididymitis) or they may indicate hydrocele or hematocele, especially when very large. Inflammations and swellings here may result from complications of venereal diseases. Tumorous growths may be found, though they are exceptional.

Swellings deep in the perineum, attended by great pain, may result from inflammation of the prostate gland or Cowper's glands, though the swelling of the prostate is not usually recognized except through digital examination by way of the rectum.

Swellings of the penis do not often occur except in connection with some inflammatory process attended with pain. Gonorrhea is a common cause, though balanitis, chancroid and various developments of syphilis produce swelling, all of which see.

SYPHILIS.—An infectious constitutional or blood disease, sometimes called "the pox," and sometimes veiled under the rather indefinite name of "blood-poisoning." Until very recently the nature of the virus through which the disease is transmitted has been somewhat of a mystery, but it now appears to be the result of a specific micro-organism, known as the *spiro-*

cheta pallida, which finds its way into the circulation and penetrates to all parts of the body. The germ is threadlike and spiral in form, or corkscrew shaped, being both active and vigorous and capable of maintaining movement and vitality for many hours after being removed from the body. It is said to belong to the same class as the germs of sleeping sickness and relapsing fever.

Infection depends upon the virus coming in contact with a raw surface—for instance, an abrasion of the skin or a break in the epithelium of a mucous membrane. Such a fissure or abrasion may be so small as to be invisible, and yet provide a doorway through which the disease may enter the small blood-vessels or lymphatics. It has been claimed that it may penetrate through a thin, soft, mucous membrane, and it is certain that infection through the eye is an easy matter. Infection at the lips or on the tongue has frequently been known, while the fingers, nipples and other parts of the body have sometimes been found to be the site of the primary lesion. As a rule, however, the disease is propagated through unclean sexual intercourse and the initial lesion is found on or about the genitals. The responsible abrasion of the skin or mucosa, or in other words, the entering doorway, may often result from violent sexual intercourse. In other cases, however, the virus may be present in the genital organs of a woman without producing infection in the male, there being no abraded tissue in his case. But while one may sometimes escape in this way, the risk is such that no one can afford to take, for in repeated exposure the contagion is certain. On the other hand, a syphilitic man may have intercourse with a woman who escapes the disease because there is no gap or break in the continuity of the mucous membrane of the vagina. Again, a man may contract the disease from a woman who does not have it, if she has previously had connection with a syphilitic man. The perfect and unbroken epithelium of the vaginal mucous membrane may protect her, while the virus is present and capable of infecting the next man. A crack or fissure of the lip will make one susceptible when kissing a diseased individual, or a scratch of the finger may provide the opportunity for infection. Physicians and midwives have thus contracted the disease, and through sores on their fingers have also spread it to many other innocent victims.

There are three general modes of infection, first, *direct or immediate transmission,* such as we have just referred to, in which an abraded healthy skin or mucous membrane comes in contact with the virus on the person of the one diseased.

Second, *mediate transmission,* in which the virus is carried by some external object from a diseased to a healthy person. Public drinking cups, carrying the germs from lip to lip, offer such a means of infection. The unsterilized tools of a dentist, previously used in the mouth of a syphilitic, public toilets, towels used in common with others, borrowed or "family" tooth brushes, and various other articles may convey the disease.

Third, *hereditary transmission.* Syphilis is an exceptional disease in that it may be directly inherited. As a matter of fact, its persistence may be observed in scrofulous conditions that appear generation after generation. This form of transmission will be considered in discussing hereditary syphilis.

Syphilis is not only a most loathsome disorder, but is often mystifying because of the many different forms through which it may manifest itself. It may attack any tissue or organ of the body, or many of them at the same time. Nothing definite can be forecasted about the duration and severity of the disease, the parts affected, or the order in which its manifestations may occur, beyond the three general divisions or phases which we shall consider shortly. The remote history of the malady is very vague and uncertain. It has been said that the disease was originally contracted by the sailors of Columbus from inhabitants of the Western World, and being brought back to Europe by them was disseminated through the civilized nations of the Continent. This view, however, is discredited by many authorities, who believe that it was known in the Orient thousands of years ago. It is thought by some that many cases of supposed leprosy in Bible times were probably syphilis.

It is in its constitutional aspect that syphilis differs from all other forms of venereal disease. It is not simply venereal, in short. And though its presence depends upon the introduction of the infectious micro-organism, yet the susceptibility of the patient also has much to do with it, as determined by his state of constitutional vigor, his habits of life, his attention to cleanliness, and other general conditions. The more virulent forms of the disease, with their almost indescribable horrors, are found most frequently among those who live under filthy and unsanitary conditions or who are alcoholic to a large degree. Healthy conditions and constitutional strength are antagonistic to the progress of the disease, and there are some, indeed, who seem to enjoy a complete immunity to it, while still others possess a partial immunity. This is probably a matter of vital resistance, the same as with many common germ diseases. At all events, it is certain that the most satisfactory and effective treatment is of a constitutional nature, purifying the blood and building vitality by the various natural curative measures advocated in these volumes.

The first manifestation of syphilis in the form of a *chancre,* appears to be of a local nature, followed a couple of months later by the constitutional symptoms of so-called *secondary syphilis* or *general syphilis.* Under fair conditions the disease should not progress beyond this stage, but unless eradicated it may pass on to the chronic condition known as *tertiary syphilis,* in which the deeper structures are involved with most destructive effect.

The *incubation period* of syphilis is usually about three weeks or a little less, though it may vary from ten days up to six weeks in some instances. In case of promiscuous exposure one will naturally be unable to judge of the length of time elapsing since infection, but if the date of exposure is known the length of time before the chancre appears will help to distinguish it from a chancroid, which may appear in two or three days after infection and always within ten days or two weeks. (See *Chancroid.*)

The *chancre,* if typical, is an unfailing sign of syphilis.

It is a sore or ulcer that appears at the point of infection in the male usually just below or on the head of the penis. As a rule there is only one chancre, but in very rare cases there may be more forming at the same time. It may not take on its characteristic appearance for ten days or two weeks, and in the beginning may not appear to be anything of consequence. It may be mistaken for a common and harmless pimple; indeed, first appears as a small, hard, red pimple increasing in size for a few days, and perhaps finally ulcerating. The red color may later turn to a coppery hue. The typical chancre, unmixed with any other infection, is smooth and dry, secreting very little, is hard, movable and painless. The hardness of the base resembles that of a piece of cartilage. Other forms of chancre usually develop from this primary form. The ulcer is shallow, more or less circular or oval, and bounded by a hardened edge. This hardness is technically spoken of as induration. If mixed with chancroid infection, the sore at first has the nature of a chancroid, later becoming hardened at the base, and perhaps assuming other characteristics of the chancre. The chancre may develop into an ulcer of greater or less size. It may become an inflammatory chancre, attended by excessive inflammation; a sloughing chancrc, attended by the falling off of parts of the flesh; a gangrenous chancre, marked by a tendency to mortification; or a phagedenic chancre, a form that eats away the flesh. The chancre in its simple form usually lasts about five weeks and then heals of its own accord.

A *syphilitic* bubo develops in the lymphatic glands nearest the chancre soon after the appearance of the latter. Naturally, in most cases this is in the groin, adjacent to the genitals. The syphilitic bubo is not painful, the glands being entirely insensitive, hard and movable. In chancre of the lip or tongue, the glands under the angle of the jaw are affected; if the chancre is in the throat, the glands of the neck swell; and if the infection is on the hand or arm, the glands about the armpits are affected.

Secondary syphilis, representing the beginning of the constitutional phase of the disease, is manifested by symptoms which appear in from six to ten weeks after the first appearance of the chancre. If these constitutional symptoms do not appear in from three to six months following the formation of the chancre, it is safe to assume that nothing more is to be feared, and that the diagnosis was a mistaken one.

The *skin* and *mucous membranes* are especially subject to eruptions, ulcerations, mucous patches, congestions and disorders generally during the secondary stage. As a rule the lymphatic glands of the entire body become enlarged, probably in some natural and spontaneous effort to combat the disease. In some cases the advent of the secondary stage is preceded or accompanied by more or less fever, loss of weight and energy, pains in the head and in the joints and bones, mental depression or stupor, a heavy expression of the eyes, or perhaps still other general symptoms.

The first thing which strikes the eye is the color and appearance of the skin, which is often inclined to a red or coppery tinge, with a peculiarly dirty aspect. Of the skin eruptions there is a great variety, some of them resembling other special skin diseases, and likely to be mistaken for them. They vary from simple eruptions to extensive crusts and severe ulcerations. There is little uneasiness or pain attending these eruptions except in the more severe forms, though there is sometimes a slight itching. The first breaking out is often of a copper color, somewhat more pale than it subsequently is. The eruption is sometimes in the form of blotches, elevated only a little above the skin. They are composed of small pustules containing a little fluid which soon dries, after which the eruption may be rubbed off like bran. This may leave the skin looking fairly sound, leading one to believe that all is well, but no hope can be more delusive. The first crop of pimples is shortly followed by a second, which produces a thicker crust and yields a larger amount of "bran." If this is removed, small ulcers appear underneath.

There is another syphilitic affection of the skin which appears in the shape of vesicles like those of small-pox, these drying and leaving scabs. Yet another takes the form of scales, one being piled upon another. This begins with an eruption of copper-colored blotches, these becoming covered with scales that are finally succeeded by scabs, and when these fall off, shallow ulcers are left with copper-colored edges. This is a stubborn affection.

Some of the most severe manifestations of the secondary stage of the disease are those of the mucous membranes of the mouth and throat, involving the lips, the inner sides of the cheeks, the tongue, the tonsils, the soft palate, the uvula, the pharynx and nasal cavities. Their effects are terribly destructive, forming gaping ulcers and eating deeply into the submucous tissues. Similar ulcerations affect the mucous membranes of the genital organs, those of the anus and rectum and sometimes those of the eye and ear. These syphilitic lesions of the anus and the rectum are sometimes mistaken for cancer, fistula or piles. The mucous patches and ulcers of the mouth and throat are always found in the most severe form in those who use tobacco and alcohol. The irritation of the mucous surfaces by these habitual poisons makes these parts particularly susceptible to the ravages of the disease, besides their influence in weakening the body and lowering resistance. The hair is nearly always affected in this disease, falling out freely.

Tertiary syphilis supervenes when the disease is not eradicated in its earlier forms. While, as we have seen, the manifestations of secondary syphilis chiefly affect the skin and mucous membranes, those of the tertiary phase involve the deeper structures, including vital organs, the tendons, the periosteum or membrane of the bones and the bone tissues themselves. The tertiary disorders are also irregular and uncertain in the order of their appearance and in the parts attacked. It is chiefly in this stage that are experienced the "indescribable horrors" met with in extreme cases. In short, no part of the human frame, not even the skeleton, can escape this devouring disease. The nervous system suffers particularly in many cases.

Tertiary syphilis is commonly marked by the formation of tumors (gumma) peculiar to the disease. These may be found in the connective tissue, and when on the surface they form gummatous ulcers. They lead to degeneration of tissues and terminate in scars. When they involve the vital organs they may cause death. The heart, lungs, kidneys, liver, spleen, stomach or intestines may be attacked.

Among the bones, those of the nose and face are more frequently the first to suffer. They are eaten away piece by piece, the disease spreading from these to the bones of the entire system, with pains of almost every kind and degree. The pains seem to reach to the very marrow, the sensation being as if the bones were being bored. These pains are most terrible at night. Where the bones are near the skin, as in the forehead or shin, syphilitic nodes or tumors often appear, like hard cancerous tumors.

The nails, as well as the hair, may be affected, becoming thick and brittle and perhaps surrounded by ulceration and destroyed. Ears and eyes may be attacked, with blindness and deafness following. The blood-vessels commonly suffer, whether the disease ever reaches the tertiary stage or not. The weakening of the walls of the arteries from this disease may, twenty years later, cause a rupture of an artery in the brain, producing apoplexy, which may then seem to arise from some mysterious and unknown cause.

The brain and spinal cord may be directly affected, or indirectly through affections of their membranes and vessels. Epilepsy, hypochondria, dementia and suicide may result. Paralysis may supervene. Severe headaches arise when the membranes of the brain are involved. Paresis and locomotor ataxia frequently result from syphilis, sometimes a score of years after it is supposed to have been cured. The greater number of cases (90 per cent.) of locomotor ataxia, in fact, are traced back directly to this disease. It is one of the most common causes of insanity.

Hereditary syphilis is a painful illustration of the Divine law which links the sins of the father with the sufferings of future generations, for this disease is exceptional in the fact that it may be directly transmitted to one's offspring. There is a difference of opinion as to the question of its being passed down to the third generation. Most authorities claim that it is not, though there is no doubt that its results in the form of scrofula and other impairments of health sometimes continue through several generations.

Transmission of the disease from the father may be called spermatic or germinative infection, his system having been so thoroughly impregnated with the disease in its constitutional form that even the sperm-cells are charged with it. When the mother suffers from constitutional syphilis, the ovum may contain the virus, the fetus naturally being syphilitic. In either case abortion is likely to take place, indeed, does take place in most instances. As time goes on and other conceptions occur, there is a lessening tendency toward abortion or toward diseased offspring. A typical case of syphilis in a woman is that of a series of pregnancies, abortions taking place early in the first of these, later taking place at a more advanced stage of gestation until finally a pregnancy may be terminated by the birth of a living child, which may die shortly. The mother who contracts syphilis during pregnancy may also infect her unborn child, though if it is near the end of the term it may escape. The so-called Colles' Law records the fact that the mother of a child made syphilitic through infection from the father, appears to be free from manifestations of the disease, and immune. The truth of the matter probably is that the woman in such a case has the disease in a modified or hidden form, and it is always possible that in time she will develop tertiary symptoms. Parents who have had syphilitic children sometimes later have normal children, the disease then either having been obliterated or being for the time inactive.

Most babies suffering from hereditary syphilis who live after birth do not show external evidences of the disease when born. To all appearances they may seem normal, but usually at the end of three weeks, or at least within three or four months, symptoms of the disorder assert themselves. The mortality rate is very high. It is said that hereditary syphilis sometimes does not show itself until puberty, but in such cases probably the symptoms in infancy were either overlooked or misunderstood. Hereditary syphilis is very commonly accompanied by physical deformity of some kind or other. Disorders of the bones and eyes are common. There is a characteristic notching of the teeth, especially the central upper incisors, which indicates hereditary syphilis. The brain and nervous system are especially likely to be disordered, resulting in an impairment which may vary from feeble-mindedness to utter idiocy. Epilepsy is sometimes a result. The first indication in infancy is usually a characteristic snuffling and difficulty of breathing, the mucous membranes being diseased. This may be followed by emaciation and sallowness of skin, a weazened and "old-man" appearance. The ears, glands, genitals, vital and functional organs, nails, hair and other parts may be involved, in addition to the various skin eruptions. There is always a tendency toward tuberculous affections. The severity of the inherited form of the disease seems to depend somewhat upon the degree of virulence with which the parent or parents are affected at the time, and usually the severity decreases with succeeding children. Some of the disorders of children afflicted with this disease are not strictly syphilitic lesions, but rather the outgrowth of the disturbances of nutrition which arise from it. There is no chancre or so-called primary phase of the disease in its inherited form.

Immunity from syphilis is supposed to follow one attack of the disease, though this is disputed by some authorities. Hereditary syphilis is also considered as offering future immunity, but various exceptions to this rule have proven it untrue. It appears that a very few individuals who have never had the disease enjoy a peculiar immunity, and others a partial immunity, due, apparently, to some constitutional peculiarity or to unusual vital resistance.

The *Wasserman blood test for syphilis* is no doubt of value as a means of determining the presence of the disease. It is supposed by many to be infallible, but one should not depend upon it too much. A positive reaction may be regarded as conclusive evidence of the disease, but a negative reaction does not always necessarily mean the absence of the malady. One should bear this in mind.

Treatment of Syphilis. The only effective and satisfactory method of combating and curing syphilis is by means of constitutional treatment, purifying the blood stream and building up the vital forces of the body. Syphilis, as we have seen, is a constitutional disease, and its symptoms are of a nature to show that the system is striving through them to eradicate the disease. The fact that the lymphatic glands, the skin and the mucous membranes should be chiefly affected in the primary and secondary phases of the disease, points conclusively to the natural effort being made to eliminate the poison. The fact that syphilis in its inherited form disappears in many cases before puberty shows the persistence with which the organism struggles to eradicate it. In acquired cases, even in spite of the handicap of irrational and devitalizing drug treatment, a majority of the victims of the disease practically recover after two and a half to three years, also demonstrating the self-curative powers of the body. However, with a strict course of natural, blood-purifying treatment, a cure may invariably be accomplished in far less time, often in a few months. This will depend somewhat upon the vitality and resistance of the individual when he commences treatment, just as the severity of the disease is ordinarily limited by the same factors. Physicians all know that there are occasional cases of so-called "spontaneous cure," in which obviously the natural forces of the body itself have successfully eradicated the poison.

Mercury has been the main standby of the medical profession in the treatment of syphilis for centuries. My experience with both the disease and the regular treatment, however, has forced me to the conclusion that in the first place mercury will not cure the disease, and that in the second place it only adds to the difficulties. Instead of merely combating the primary disease one must also contend with a case of chronic mercurial poisoning, which, in some instances, is far more serious in its results and more difficult to eradicate than the disorder which it was intended to overcome. Some eminent students have expressed the belief that some of the frightful developments of the tertiary stage of the disease, affecting the deeper structures, are largely or wholly due to mercurial poisoning instead of to the disease proper. Whatever may be the facts of the case, we know that similar results can be produced by mercury in a man of previously good health. And aside from any contention on this point, the standard medical authorities themselves declare that attention to the general health far outweighs in importance the question of drugs. There can be no doubt that the essential factor of the treatment is the cleansing of the system by general eliminative and blood-purifying measures.

The more recent remedy, Salvarsan, more popularly known as "606." has been extravagantly praised as a "specific" for syphilis. More extended experience with it, however, has proven disappointing and most physicians still prefer mercury. Salvarsan is dangerous in many cases and the results are uncertain to say the least.

If the victim of syphilis is accustomed to the use of alcohol and tobacco, then the first and most important step in the way of treatment is to discontinue absolutely the use of these two poisons. We may say briefly that if the patient insists upon and persists in the use of tobacco and alcoholic beverages, then he will not only make the disease almost impossible to cure by any methods, but is simply condemning himself to prolonged period of extreme and unnecessary suffering. That syphilis has generally proven such a virulent and stubborn complaint is probably due in part to the common use of these poisons by those afflicted with the disease, for it is only natural that those whose habits are such as to expose them to a contamination of this kind are chiefly those who drink and smoke.

Upon the first appearance of the initial sore, or chancre, constitutional treatment should immediately be commenced. Cauterization of the chancre is a common practice, but one which the patient should be warned against. Remember that it cannot be of the slightest benefit, for the syphilitic virus has entered the system from ten days to six weeks before the appearance of the chancre. Mild antiseptic washes may be permitted for cleansing and sterilizing the part, but the burning and cauterizing of the deeper layer of tissues can only retard the rebuilding processes. Strict cleanliness is imperative, and salt water packs are of great advantage. If desired, a weak solution of permanganate of potash may be employed to maintain an antiseptic condition, but we may say that most antiseptic remedies commonly employed for the purpose are of too great strength, having a destructive effect upon the already abnormally sensitive tissues. Then there is the further danger of absorbing them, which means that still more poison enters the system. There are really very few cases in which the use of nitrate of silver, carbolic acid or other powerful caustic applications is justified, and in nearly all cases the chancre will disappear readily as the result of constitutional treatment.

Local treatment for the skin affections of the secondary and tertiary stages of the disease should be similar to that for the chancre. Scrupulous cleanliness is essential. Local wet compresses should be kept on the parts constantly if possible and in many cases slightly salted water may with advantage be used for the purpose. Remember that all these cloths, as well as sheets, towels and clothing used by the patient, should be very carefully handled, not only to avoid inoculating others with the disease, but also to avoid starting new sores on his own person. Thorough boiling is necessary with all cloths, towels, underwear, handkerchiefs and the like. If an antiseptic wash is desired for the sake of cleansing and sterilizing the syphilitic lesions of the skin, or as a mouth wash for the patches and ulcers of the mucous membranes, be sure that only a very mild or much diluted solution is used. The same applies to syphilitic lesions of the rectum or genitals.

As a powerful eliminative factor, activity of the skin is to be encouraged in every possible way. Daily air baths and the wearing of as little clothing as possible at all times are urgently recommended. Dry friction of the skin by means of rough

Turkish towels or flesh brushes, except where there are open sores, is very valuable. A wet sheet pack daily, or every other day, should be employed, and in addition to these, if one is sufficiently vigorous, he should take dry hot air or steam baths once or twice each week. A cabinet bath will be very satisfactory for this purpose. (See Volume III, Chapter II.) These will be extremely effective in helping to purify the system.

Fresh air and exercise are of extreme importance in the cure of syphilis, both because of their direct influence in cleansing the blood stream and because of their value in building vital power. The patient should arrange to live and to sleep outdoors, if possible. If he is employed in some confining work he will be considerably handicapped, though this will only increase the urgency of strict treatment in other respects. At least he can have fresh air while not at work. In the matter of exercise, a small amount of violent activity is not so valuable as more moderate exercise which is continued over a considerable period of time, for instance, three or four hours, and which is of a nature to induce free perspiration. One should not exhaust himself, but the more he perspires the better for purifying his blood. Walks of ten miles or more will be of great value.

Special attention should be given to preserving activity of the bowels, for constipation will seriously impede progress in eradicating the disease. This should be taken care of by means of diet and exercise, if possible, but with the assistance of enemas if necessary.

The drinking of water in large quantities is a potent factor in successful treatment, and one should make it a practice irrespective of diet, fasting or other phases of the treatment. Distilled water is preferable though not necessary. The important thing is to consume plenty of good, wholesome water. There is no advantage in going to any "hot springs" provided one is willing to use water at home, internally, externally and eternally.

In the matter of diet it may not be necessary to follow any special restricted regimen if one closely follows the treatment suggested here in all other respects. Always, however, it is important to avoid overeating, for one should only consume what is actually required for the needs of the body. Two meals per day are therefore better in most cases than three. In all cases it is well to use fresh, acid fruits freely, and to avoid tea, coffee and meat. The question of meat is not so important as that of the stimulating drinks named, provided one secures a great deal of exercise and pays proper attention to bathing, sheet packs, steam or hot air baths and the other measures recommended. At the same time, in any severe case, meat should be rigidly excluded from the diet.

Probably the best dietetic plan in beginning treatment, in most cases, is a fruit diet, or a limited diet consisting largely of fruit. Specifically, I would suggest Fruit Diet No. 75 (see Vol. III, Chapter VI) for three or four days, followed by Fruit Diet No. 78 for a few days more, and after that Limited Diet No. 24, 25 or 30. This diet may be enlarged upon later if there seems to be a decided loss of weight or strength. If one has considerable weight and vitality, a fast of a couple of weeks, with an enema every other day, would be an effective way in which to commence treatment, adopting Fasting Regimen No. 3, followed by Breaking-Fast Regimen No. 18 and then one of the limited diets just mentioned. If one is not especially strong, however, the fruit or limited diet is to be preferred to the fast, or, if emaciated and reduced in vitality, a fast of one or two days would be in order, followed by Milk Diet No. 32. In that case, after gaining normal weight or above, the adoption of a limited diet would be in order. In many cases a most satisfactory regimen would be provided by Fruit and Nut Diet No. 80, or by Cereal Diet No. 83. It is true that variations in diet may be necessary in individual cases, but the regimens named will usually be of great value. They should be persisted in faithfully.

The stimulation of the entire nervous system by means of spinal invigoration is of great value. Any of the Physcultopathic treatments illustrated in Volume III, Chapter III, will be beneficial, though Treatments E and F are especially commended, used in connection with the hot towel called for in Treatment D. If there is no attendant available, Treatment G is advised, though any of those following might be added.

In connection with these measures mentioned, the patient should make it a point to retire early and so secure plenty of sleep, he should avoid exciting amusements, and in every way should observe the claims of personal hygiene and sanitation. There should be no relaxation or cessation of the general plan of treatment when the symptoms are relieved or when they disappear, for it is the characteristic of this disease to seem to disappear at times and then to break forth again with even more violent manifestations. Before the disease was understood it was naturally the habit of the victim to think himself cured when the symptoms subsided, only to be horrified at subsequent more serious developments. Probably in many cases a few months of treatment by the methods I have outlined will be sufficient, and yet in other cases it might take considerably longer. Remember, however, that these measures are extremely powerful in their influence for cleansing the blood, and that they may be depended upon when drug treatment fails completely. Previous drug treatment, however, always makes a cure infinitely more difficult.

The fact of a permanent and complete cure is rather difficult to establish, and for this reason one who thinks himself cured cannot afford to take any chances, as for instance in marriage. It is most important that he should not resume the use of either alcohol or tobacco. Continuous absence of symptoms for a couple of years usually indicates a cure, but one should not marry earlier than a couple of years after the last traces of the disease have disappeared. To make sure of a perfect physical condition it is a wise plan a few months following the apparent cure, and when the patient has acquired a high degree of general bodily vigor, to undergo a fast of ten days to three weeks for a thorough and final purification of the system. Following such a fast, the cells and tissues of the body will be largely built up anew, all structures made over, as it were, and any slight remaining traces of the disease will probably be obliterated. A similar fast, perhaps twice each year thereafter, would be advisable. If the disease is really cured, healthy offspring may be expected. If one is disposed to judge of his condition by the Wasserman test, he should have the test made repeatedly for a number of months and after that once or twice each year.

If men and women would abstain from promiscuous or illegal intercourse, sexual diseases might be prevented. Aside from that, however, the first requisite for prevention is cleanliness. The use of mild antiseptics, or harmless washes is permissible, including one made of a solution of green soap. In any event, cold water ablutions should always follow the act of coition.

Testicles, Disorders of.—The most common disorders of the testicles are the inflammatory conditions known as *orchitis* and *epididymitis,* especially considered under *Testicle, Inflammation. Tuberculosis* of the gland, a very destructive process if not arrested, is briefly referred to in the same place, resembling chronic orchitis, known as strumous orchitis, and is treated by the same constitutional means as those employed in chronic inflammation.

The testicles are also subject to a form of neuralgia in some cases, giving rise to intense pains as the result of sexual excitement or other irritation. The treatment in such cases should consist of hot applications together with a rigid constitutional regimen, as in cases of inflammation.

For absence of the gland, see *Testicle, Undescended.*

For swellings, aside from painful inflammations, see *Hydrocele* and *Hematocele.* Cysts, fibroid tumors and cancers should be treated as in any other part of the body. (See Vol. IV.) In case of swellings in the scrotum the possibility of rupture should be considered. (See *Rupture*, this chapter.)

Atrophy of the testicle is sometimes the result of orchitis, particularly following those cases due to mumps, but more frequently it is caused by some injury to or impairment of the spermatic artery, perhaps from its rupture or ligation. It may less frequently result from chronic epididymitis, pressure from badly fitting trusses, rupture or closing of its duct, the vas deferens, or perhaps sexual excesses or abuses. Varicocele sometimes causes an impairment of the testicle, making it soft and flabby, and perhaps tends to atrophy in some instances. If any of these causes are associated with it, attention should be given them, otherwise the persistent practice of cold sitz baths, local cold wet packs, or alternate hot and cold wet packs, with a general vitality-building regimen, may be recommended.

TESTICLE, INFLAMMATION.—(Orchitis; Epididymitis.) When the body of the testicle itself is inflamed, the condition is known as *orchitis,* and the infection usually is brought through the general circulation, or the lymph circulation, as the result of mumps, typhoid fever or general septic or pus infections. Tuberculous or syphilitic infection may cause it. It seldom arises as the result of gonorrhea.

When the epididymis is alone or chiefly involved, the condition is known as *epididymitis,* the inflammation in such a case being nearly always due to gonorrhea. Strong injections in the treatment of gonorrhea of the urethra are often instrumental in driving the infection deeper so as to involve the prostate, seminal vesicles and epididymis, though sexual excitement and indulgence, strain or over-exertion, alcohol and the use of instruments under the same circumstances may be contributing causes. Injuries may naturally give rise to inflammation of the testicle.

In orchitis there is intense pain, much swelling of the testicle, redness and extreme tenderness, with an aching, dragging sensation along the cord and in the groin. The symptoms in epididymitis are much the same, but with the pain and swelling more in evidence in the lower and back part of the testicle. If both sides are affected, it is usually one after the other, but not at the same time. There may be constitutional symptoms as well, including some fever, furred tongue, nausea or vomiting, and constipation. The epididymis is left in a more or less hardened condition, which may continue. The fine convoluted tube which forms the epididymis may be obstructed and permanently closed as a result of the infection and inflammation, and if this occurs on both sides sterility is an inevitable result. The spermatic cord is also naturally involved.

Orchitis may take a chronic form as a result of syphilis, or in other cases a chronic inflammation, with swelling and tenderness, may follow an acute attack. In a scrofulous subject, a chronic inflammation of the testicle may take the form of a tubercular disease, sometimes called strumous orchitis.

Treatment. The dietetic and general regimen to be followed in inflammations of the testicle is given in Volume IV, under *Epididymitis* and *Orchitis*. Special attention should be given to the sitz baths, hot and cold, advised, and also the fasting, water drinking and enemas. In epididymitis the chief attention should be given to the cure of the gonorrhea which has brought it about. In the case of orchitis, when known to be due to some primary disease such as tuberculosis, mumps, syphilis or other infection, these latter disorders respectively should be combated with constitutional treatment.

TESTICLE, UNDESCENDED.—Normally the testicles descend from their first position in the abdominal cavity, through the abdominal rings, to their permanent position in the scrotum, about a month before birth. In some instances they fail to do so until after birth, and in still other instances they fail to descend at any time. There have been rare instances in which the testicles have been entirely absent, in which case the individual presents the appearance and general characteristics of the eunuch. In cases of undescended testis, the gland is usually retained in the abdomen, though sometimes it is lodged in the inguinal canal, or is found in the tissues of the upper thigh. In a few instances, where the testicle reaches the scrotum, it is turned around so that the epididymis lies in front. Practically all of these abnormal positions are due to imperfect or arrested development of the cord.

In some instances the malposition of the testicle may not seriously interfere with its functional power, and sterility does not result. But more frequently the retention of the gland interferes with its development, causes fatty degeneration, or in some other way prevents its normal action in the development of the sperm-cells, so that sterility is the result.

Little can be accomplished in the way of remedying a condition of this kind, except in some instances in which surgery may be employed to place the testicle in its normal position.

UNDEVELOPED ORGANS.—In considering the question of undeveloped organs it is important to ascertain whether the parts, if small, are really abnormal or undeveloped, or whether they are naturally small in size but perfect in functional power. As we have seen from the preceding chapter there is a considerable variation in the size of the genital organs, but apparently without any relation to their functional capacity. There are many who may be inclined to worry about the lack of large dimensions of these parts, perhaps fearing that this will prove a serious marital handicap, but the parts will usually adapt themselves to each other in such a way as to set at rest all fears of this kind. We may say generally that most cases of seemingly small organs do not imply any defect.

It is true that there are rare cases of undeveloped parts, and that they may sometimes indicate a lack of virility, but more frequently a wasted or partially atrophied condition of the parts is observed, entirely the result of abuses or excesses. Atrophy of the testicle has been briefly referred to under the heading of *Testicle, Diseases of.* Undersized organs, however, whether the result of wasting or original lack of development, are best improved by all-around constitutional treatment. We have repeatedly shown that sexual power is intimately associated with and dependent upon the condition of the body as a whole, and the general methods of virility building described in the following chapter should be adopted and persisted in. The muscular system especially should be built up to the highest attainable degree of perfection, and with its development to the outlines of normal manhood will come the proper growth and power of the generative system. Ordinarily these parts should develop at and following puberty.

For deformities and curvature of the male organs conservative and safe surgical measures may be necessary, supplemented by the natural measures described below.

The value of mechanical devices, so frequently recommended in cases of this kind, is questionable. The use of cold water and cold sitz baths is always of greater advantage. In most cases mechanical appliances are to be condemned, and they are always likely to excite or injure the nervous system. Air pumps have been much advocated, bringing an increase of blood to the parts, but while they may be of advantage in some instances, in many cases they might be harmful.

Urethritis.—Inflammation of the urethra, accompanied by pain and a catarrhal discharge. There are two forms of urethritis, *simple or non-specific urethritis* and *specific urethritis,* which is gonorrhea (See *Gonorrhea.*) The symptoms are very similar in many respects, and it is sometimes difficult to distinguish between them. This is determined in such cases by the presence or absence of the gonococci, the specific germ of gonorrhea. When the non-specific form of urethritis invades the deeper portion of the urethra and the adjacent gland structures, the course of the disease may be severe, though naturally it is not so serious in its consequences as gonorrhea; and in some instances the disorder may occasion only slight inconvenience.

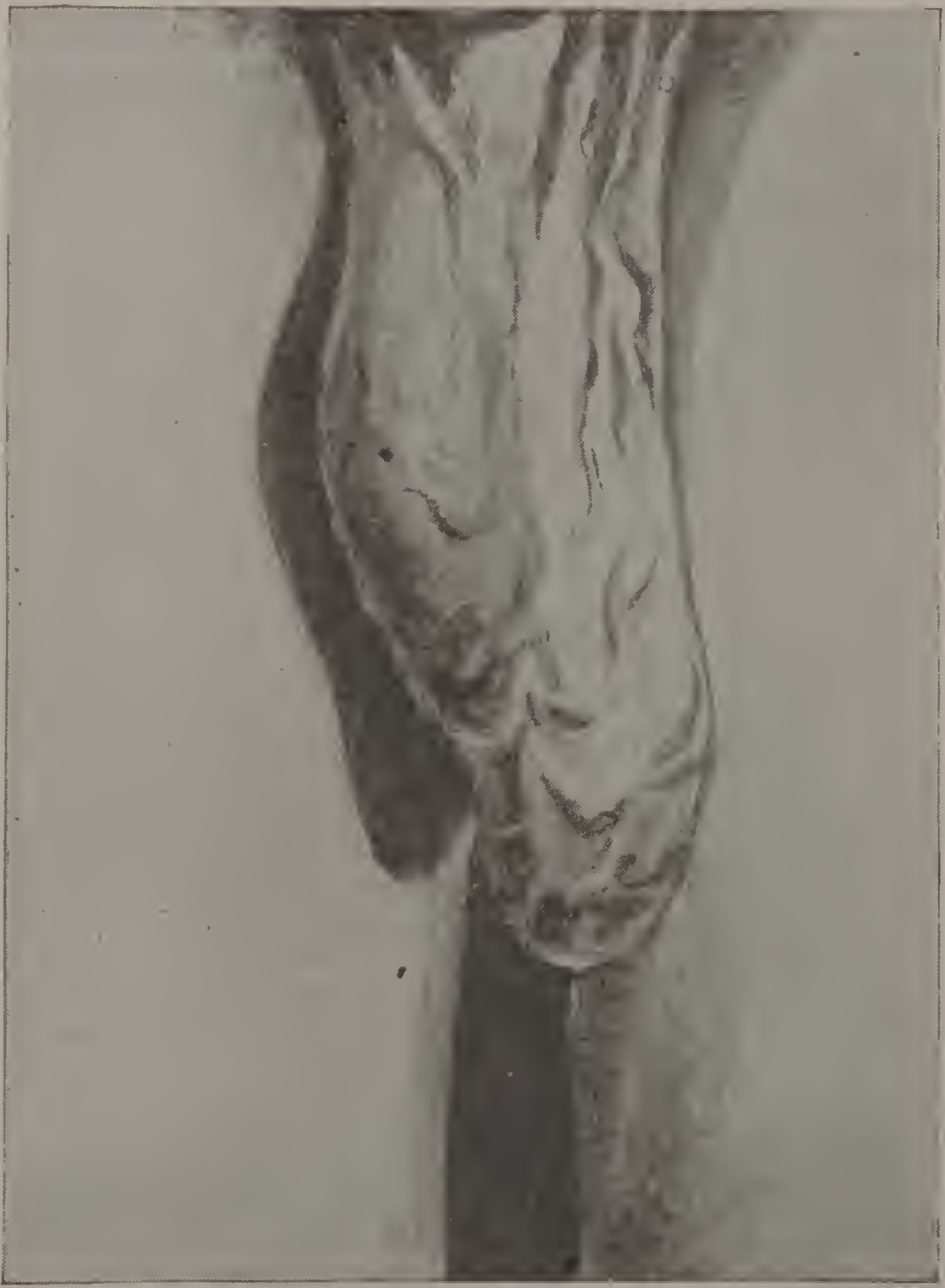
Non-specific urethritis may be the result of inoculation during sexual intercourse from discharges due to inflammation of the womb or other parts of the female organism, it may arise in a similar way from cohabitation during the menstrual discharge, or it may develop as the result of injury, the injection of chemicals, the use of infected instruments in the urethra, irritation from the continued use of cathartics, chancroids, syphilis, rheumatism, gout or other disorders. In respect to these causes it is not unlike inflammation of the womb, vagina or the urethra in the female. Most cases of urethritis, however, are specific or gonorrheal in nature.

Non-specific urethritis is first indicated by itching or smarting of the urethra, especially during urination. As the condition develops there is a discharge of mucus or pus, with increased pain when passing water.

Treatment should be the same as for gonorrhea, with special attention to the plentiful drinking of water, fasting and regularity of the bowels, though there would not be any necessity for injections, except for salt water in severe cases. Strong injections will destroy the mucous membrane and produce stricture.

VARICOCELE.—A rather common and in some cases painful disorder of the spermatic cord, in which the veins are found in a dilated and varicose condition, producing a swelling of the scrotum. It is usually found in a comparatively mild form, and is said to occur in about one out of every ten young men. It is more frequently observed during adolescence and up to the age of thirty.

There are many cases in which the spermatic veins are slightly full and tortuous, which cannot really be called varicocele, for the veins are both normal and vigorous. The quack doctor, however, does not fail to excite alarm in such cases if he can once get the attention of the normal but uninformed


Varicocele, showing appearance of scrotum.

young man, who can be persuaded to think that he has a serious and destructive disease. As a matter of fact, varicocele probably offers the most profitable of all fields for the quack, whether the disorder is real or imaginary. The quack makes the young man believe that every possible sexual disorder, aside from venereal disease, will result from this swollen condition of the spermatic veins.

The spermatic cord is the sheath-like structure suspending the testicle on each side, and containing the duct of this gland, the vas deferens, the spermatic artery and the spermatic veins which take the form of a plexus or network. A poor general circulation, congestion of blood in the parts, laxity of the tissues and other factors may cause these veins to enlarge until they feel "like a bunch of earth-worms," cause an enlargement of the scrotum and perhaps give rise to distressing symptoms or lead to serious results. In many cases there are no symptoms except for the enlargement mentioned. In some cases, where the scrotum hangs very low, there is a sensation of weight and dragging down. In other cases there is a dull, aching pain, which may at times become intense. There may be tenderness of the veins and cord. When the scrotum is lax the tortuous outlines of the veins may be distinctly seen.

Varicocele is nearly always found on the left side, there being three important general reasons for this fact. In the first place, the left spermatic cord is longer than the right. Then the left spermatic vein opens at right angles into the corresponding renal vein, which anatomical peculiarity does not favor such ready return of the blood on that side. And finally, the left spermatic vein runs across in front of that fold of the descending colon known as the sigmoid flexure, with the result that the latter may press upon and obstruct the vein when it is distended by bowel accumulations. The constipated man, therefore, is far more likely to have a case of varicocele, and the cure of constipation, when present, is one of the first essentials in the treatment of the complaint under discussion.

Many authorities claim that there is usually or frequently a hereditary predisposition toward varicocele, inasmuch as it runs in families. That is to say, the structural peculiarities of the veins, their walls and valves are hereditary. Weak or imperfect valves in the veins would be conducive to it, the same as to varicose veins in other parts. In any case, in connection with the general weakening and enlargement of the veins, the valves are impaired and in some cases entirely effaced, while hardened deposits may sometimes be found. In general the walls become thinned, though sometimes thickened by an increase of cells with hardening.

Long standing is supposed to be a cause of varicocele, but it cannot be regarded as an active cause inasmuch as it will not affect one who is vigorous, normal and of a good circulation. The real cause is usually to be found in the debility and lack of tone of the individual, or perhaps in the continued or frequently repeated congestion of the parts due to too much sexual excitement, especially in early life. Masturbation, in this respect, may be an active factor, causing frequent engorgement of the veins, and also promoting that state of general debility which predisposes to it. But while many entertain the impression that varicocele is always the result of sexual vice, the condition may prevail in those who have not offended in this respect, but who are generally lacking in strength and vigor. The causes may include obstruction from pressure of a tumor, rupture or truss, as well as from the constipation already mentioned, injury to the cord, strains in lifting, especially if constipated, and sedentary habits.

In many cases the mental condition of the patient in his worry about the matter, and his fear as to impending impotence, is more serious than the varicocele itself. Ordinary cases can be readily cured, and the worry is entirely unfounded. In more severe cases, however, the degeneration of the veins and their walls may be serious, and as a result of the congestion of the testicle, due to the failure of the return circulation, this vitally important gland becomes softened, impaired in function, and more or less atrophied. Sometimes it is shrunken to the size of a pea as the result of this disorder.

Treatment. With this understanding of the nature and causes of varicocele, the reader will the better appreciate the value and potency of physical culture treatment. The building of all-around bodily vigor is absolutely imperative in a case of this kind, and the treatment will require special attention to exercise and the use of cold water. The disorder is so common that it is included in the list of general diseases in Volume IV, when special suggestions for treatment will be found. If neurasthenic, the general constitutional treatment for Neurasthenia should be followed in connection with the cold sitz baths and special treatment for varicocele. Or if the general health is much impaired, a fasting and dietetic regimen may be desirable, possibly a period spent on the milk diet. (See *Vital Depletion,* Vol. IV.) The operations commonly advised are of little or no advantage in most cases. As a matter of fact, those cases in which there is no pain or special inconvenience, should occasion no alarm or fear of results. Simply adopt the treatment for building a high standard of manhood, and forget all about the varicocele.

One important factor of treatment, however, perhaps in many cases the most important factor, is the necessity for avoiding sexual excitement and erotic thoughts. To avoid the cause is a first requirement in the treatment of any disease, and sexual excess or even mental sexual excitement must positively be avoided. If masturbation has been practiced, see special discussion of that topic.

URINE, NORMAL AND ABNORMAL.—*Simple Method of Examination.*

The normal secretion of the kidneys is a clear, amber colored fluid, of a characteristic, not unpleasant odor, and an acid reaction. In normal condition, the amount voided in twenty-four hours is about one and one-half quarts, and its specific gravity varies between 10.15 and 10.20. It consists chiefly of water, in which are dissolved several organic and inorganic substances. Of the first, uric acid and urea are the most important; of the latter we will mention chlorides, sulphates and phosphates of sodium, potassium and calcium.

In morbid conditions the urine may change in appearance, reaction, quantity, specific gravity and chemical constitution.

When the urine contains an admixture of pus or undissolved salts, it is turbid. This is often the case in simple urethritis, in gonorrhea, in catarrh of the bladder or abscess of the kidney. In some of these conditions, and particularly in cases of tumor of the bladder or of renal colic (kidney stone) the urine is more or less reddish from an admixture of blood. The chemical reaction of the urine frequently changes from acid to alkaline in chronic catarrh of the bladder. This is ascertained by a simple test with litmus paper: if a pink strip of litmus paper, dipped in urine, changes its color to blue, the reaction is alkaline; if on the other hand a blue strip changes to red, the reaction is acid or normal. Alkaline urines usually also have a most unpleasant odor, owing to a premature decomposition.

The total quantity of urine for twenty-four hours is often considerably diminished in acute Bright's disease, and it is considerably increased in chronic Bright's Disease and Diabetes. In the first case, however, the specific gravity of the urine, observed with a simple instrument called the urinometer, is found to be remarkably low. In Diabetes it is very high.

Among the abnormal constituents found in urine, albumen and sugar are the most important. To test for albumen, pour in a test tube about a tablespoonful of urine, boil over the flame of an alcohol lamp and add a few drops of vinegar diluted with about double its quantity of water. A cloudiness of the urine thus treated means the presence of albumen. Another simple test is the following: Pour into a test tube a little pure nitric acid, then holding test tube in a slanting position, pour some urine carefully drop by drop on the wall of the test tube (using a dropper) so that the two liquids form separate layers; a white ring appearing at the point of contact of the two liquids means the presence of albumen. Small traces of albumen are present in the urine in catarrhal conditions of the urethra and the bladder, but larger quantities always indicate some more serious trouble, usually Bright's Disease.

The test for sugar is also very simple. Pour into a test tube some freshly mixed Fehling's Solution, and add an equal quantity of urine. Boil in the alcohol lamp. In the presence of sugar the normal blue color of the mixture will change to a brick red. Fehling's Solution consists of a mixture of copper sulphate and sodium hydrate in water in exact proportions, and should be prepared by an expert chemist. The presence of sugar may occasionally be due to an excessive amount of sugar in the food, but if this possibility be eliminated and sugar is still present in the urine, the diagnosis of Diabetes is positive.

In some disorders of the function of the liver, particularly when complicated by jaundice, the urine contains bile pigments. Such urine is usually dark and its form is yellowish.

A simple chemical test for bile pigment is the following: Filter some urine through filter paper first in a funnel, unfold the filter paper flat on the table and touch the paper with a glass rod dipped in strong commercial nitric acid. At the point of contact a green ring will appear which will gradually widen and after a little while turn red.

In some digestive disorders, particularly in the course of chronic constipation and when abnormal putrefaction takes place in the intestines, a substance, called indican, appears in the urine in large quantities. To test for indican, pour into a test tube a tablespoonful of urine, and add the same amount of strong hydrochloric acid, then add, drop by drop, some hydrogen peroxide, waiting a minute or so after the addition of every few drops until the mixture begins to assume a bluish tinge. If now a little chloroform be added and the contents gently shaken by turning the tube upside down and back a few times (after corking the tube) the chloroform will, in a few minutes' time, settle at the bottom, and assume a distinct blue color, in the presence of an excess of indican.

Almost every urine yields on standing some sediment, which can be examined under the microscope. Such microscopic examinations often furnish important information.

WARTS, VENEREAL.—(Papillomata; Venereal Vegetations.) Cauliflower-like growths sometimes appear upon the genital organs, and are spoken of as venereal "warts," vegetations, or, technically, papillomata. They appear upon the end of the male organ or upon the edges of the female genitals. They may arise as a result of venereal disease, but may also occur as the result of uncleanliness and irritation from impure secretions. They are painless, of a grayish color, fragile in texture and slough off easily. They seem to be contagious and reproduce themselves by inoculation. They may grow to immense size. Constitutional blood-purifying treatment is essential, together with strict cleanliness of the parts. Cloths wet in salt water may be applied. In some cases removal by surgical means is advisable, though they are not dangerous as a general thing. If associated with any venereal disease, the latter should have special attention.

CHAPTER IX.

VIRILITY AND FATHERHOOD.

MANHOOD is the first requirement of a man. If he is lacking in virility, then he also lacks in the physical energy and force of character which are necessary for any real achievement. Men of power and capacity in any direction, men of force and personality, are and always have been men of great virility. The man without manhood, like the woman without womanhood, is a nonentity and a perversion from the order and purpose of Nature.

What, then, is *virility?* It is the essential quality of normal and healthy manhood that goes with a full and vigorous degree of reproductive power. The term comes from the Latin *vir,* meaning a man, and signifies adult manhood and manly character together with the power of procreation. It means not merely a strong and healthy condition of the reproductive system in itself, but also a high degree of strength and development of the entire bodily organism. It means constitutional vigor, nerve energy, functional strength in every vital organ, and the pure rich quality of blood that is associated with superabundant, faultless health.

As I have already pointed out in Chapter II of this volume, discussing sexual hygiene, there is an intimate relationship between reproductive power and the condition of the general health. A decline of either is inevitably associated with an impairment of the other. It has always been noted that impotence, whether observed as an accompaniment of old age or under any other circumstances, is associated with a condition of general debility, failing physical strength and decreased nervous vigor. In some cases the sexual failing is directly the result of a constitutional weakness which has been brought about by overwork or other general violations of the laws of health, but in other instances the general bodily weakness observed may be the result of some special abuse or disease of the generative system. The reproductive system cannot be regarded as something apart from the rest of the body. They go together, one the intimate and essential part of the other.

Virility, then, may be said to depend upon both the condition of general constitutional vigor, on the one hand, and the functional integrity and soundness of the reproductive organism, especially the parental germ-glands, on the other. And while the condition of the latter naturally depends upon the former, yet it also influences and largely determines the condition and vigor of the former.

The importance of these parental germ-glands, or in other words, the testicles, through their influence upon the state of the body as a whole, is nowhere more conspicuously seen than in the disastrous results of their entire removal. The surgeon may remove an appendix usually without any very serious effect upon the general organism, if the patient recovers. A man may have an arm or a leg taken off, he may lose an eye or may in some other way be dismembered or disfigured, without suffering any serious loss of the energy, ambition and forceful mental characteristics that belong to vigorous manhood. But the removal of the testicles (see also *Castration,* Chapter VIII, this volume) is inevitably and immediately followed by a radical and permanent change in the entire physical and mental make-up of the man.

The exact nature of the subtle influence of the testicles upon the rest of the body is not entirely understood by physiologists, but no fact is better established than that this influence is all-important. There are some authorities who hold that in addition to the regular seminal secretion carrying the reproductive or sperm-cells, the testicles also secrete what is spoken of as an "internal secretion," which is taken into the blood and lymph streams, and which has an important and powerful influence upon all of the other tissues and upon the vigor of the body generally. Other authorities hold that the seminal secretion itself, when not discharged, is reabsorbed for constitutional purposes, thus devoting for the use of the individual the energy which would otherwise be employed for reproductive purposes, or perhaps wasted through the misuse of the sex function.

The latter theory seems the more probable. Certainly it is not to be supposed that these important glands are inactive except when there is the unusual demand involved in the discharge of the germinal fluid, or that they suddenly stop secreting as soon as the seminal vesicles are filled. Without doubt the secretion of the vital, life-giving fluid continues at all times, and that this, when not discharged, is available for promoting the welfare and adding to the strength and energy of the individual. One ounce of the seminal fluid is estimated by some authorities as being worth forty ounces of blood, and by others as being equivalent in energy to sixty ounces of blood, but though these estimates are naturally more or less uncertain and doubtful, yet we know positively that this life-bearing fluid is the richest secretion of the entire body, and that it is indispensable to the development and maintenance of all the essential attributes of perfect manhood. The full development of the bodily structures in youth absolutely depends upon it, as for instance in that maturing of the structures of the larynx and throat which produces the change in the voice between boyhood and manhood. The growth of the beard in the human male and the growth of the horn in the male members of certain animal species, depend largely upon the presence and activity of the testicles and their secretions. The change of the voice and the growth of the beard or horn are not themselves the merely superficial and unimportant changes that they may seem. They are indicative of the general development of the entire organism. They mean that all of the internal organs and tissues of the body are similarly developing and assuming their normal, vigorous and complete adult form, with increased muscular power, greater nerve energy, and the greatest fineness, firmness and strength of every fiber and cell structure. These developments mean, in the young man, a keen, clear mind, courage, ambition and that force of character without which a man is not a man at all.

The mere passing of the years will not produce these various changes or developments that indicate virility, for when the testicles are removed in childhood the voice does not change, the beard does not grow as it should, and the entire being lacks in strength, endurance, mental power and in moral character.

Even in childhood, although the sperm-cells are not then developed and ripened, and the organism does not produce an accumulated seminal secretion which may be discharged for reproductive purposes, as in adult life—even in childhood the presence and influence of the testicles are none the less important and indispensable. Throughout the period of rapid growth during childhood, all of the energy developed in these glands is apparently required to help in the production of bone and muscle structures and the other tissues of the body, with no surplus secretion that can be discharged. In short, every drop or particle of the secretion of these glands is appropriated by the system for constitutional purposes as fast as generated, and the result is the incessant activity, rapid growth and vigorous health that we observe in normal boyhood. The boy who springs from sexually vigorous and healthy parents, and who inherits from them a sound generative organism, will be sound and strong, full of fire and life and boyish activity—the kind of a boy that is constantly "up to something." He is the only kind of a boy who is thoroughly all right in every way, and under right conditions and habits will ultimately attain to a perfect and virile manhood.

Following the period of the most active growth comes that of *puberty,* somewhere between fourteen and eighteen years, during which the generative system itself commences to develop, and the boy enters upon the period of change or development from boyhood to young manhood. The shoulders begin to broaden, the voice begins to change, the mind becomes more alert and active, eager to do great things, and all of the structures of the body tend to acquire that strength and resistance which mark the man who has 100 per cent. of manhood.

And it all depends upon the influence of the normal secretion of the testicles. Perhaps the best plain, everyday illustrations of the importance of these germinal glands are seen among some of the animals with which we are most familiar. The practice of castrating male calves is very common, and every one knows the difference between the bull, with his tremendous strength and fiery spirit, and the castrated steer. The bull has a larger, more powerful neck, his horns are much thicker and heavier, he has more hair on his forehead, and is tougher, harder and in every other respect superior to his emasculated brother. The slow-moving, sluggish and apathetic ox has been much used for draught purposes in the past only because the bull is too fierce and hard to tame, although the latter could pull a much heavier load and has infinitely more endurance. The muscles of the bull are more dense and firm, and therefore more tough when used as food. For tender beef, accordingly, the steer is preferred.

The same thing is generally true of the horse, although colts are usually not castrated until they are two or three years old in order to permit of a better development, more firmly knit muscles, stronger bones and generally greater strength than they would be able to acquire if the operation were performed as early as in the case of cattle. Even so, the stallion has far more endurance and is capable of doing much more work than the gelding, it being estimated in some quarters that two stallions are equal in pulling power and working capacity to three geldings. In some places they are used for draught purposes, being worked very hard and driven in teams to keep them gentle. The only reason for the castration of horses is to make them tame and safer for driving.

Emasculated pigs are known to produce fat in larger quantities than normally, which means that they incline to a condition of flesh less firm and vigorous than when left in their natural state. It has been found that when fawns are castrated previous to the growth of their horns, the latter will not grow at all, no matter how long they may live. Of course the mere growth of the horns, or of the mane may seem an unimportant matter, but it is fundamentally important inasmuch as it indicates a deficiency in the nutrition, development and general organization of the entire body of the animal.

It is so with other animals and especially with men. A man is also made "tame" by loss or impairment of the testicles. Eunuchs have already been described briefly (see *Castration,* Chapter VIII) and we have seen how their faces remain beardless and smooth, their voices piping and high pitched like that of a child, their physical strength and endurance pitifully limited, and their minds incapable of any full development or activity. They do not learn readily, and cannot be improved by education and training as can the average normal man. Lacking in spirit or courage, they are easily kept in slavery, doing such household service or other drudgery as requires little strength, but of no value for the more strenuous and physically exacting life of soldiers or sailors. Though they may be full sized, and even above normal weight in their fleshiness, their muscular tissues are porous and flabby, without density, solidity or strength, their joints are loose, their grip feeble and the entire bodily structure is marked by laxity and weakness. Lacking vitality, they are prone to die early.

The important influence of the seminal secretion as a factor in the general condition and development of the individual is further shown in some cases of deformity or misplacements of the reproductive glands. These conditions are referred to in Chapter VIII of this volume, under *Hermaphroditism* and *Testicles, Undescended.* When the glands are functional, even in such cases, there is no lack of virility. But when, as frequently happens, the disorder or deformity is the result of the arrested development of the glands, or perhaps their entire lack of development, with their impaired function or absence of function, the deficiency is made apparent in the weakness and lack of development of the entire body, very much the same as in the case of early castration. As we have seen elsewhere, the mysteriously feminine voice of the supposed hermaphrodite is not the result of his being "half man and half woman," (which he is not) but is due simply to his lack of virility.

Now, there is an important lesson to be drawn from all these facts. Especially should every growing boy understand them for the sake of emphasizing the importance of the seminal secretion and the necessity for maintaining a healthy and vigorous condition of the germinal glands. For while it is true that castration is not commonly practiced among us, yet practically the same result is accomplished to a greater or less extent by many other common practices which involve the abuse of the sexual function and a consequent loss of virility. All excesses and abuses of this kind not only weaken the reproductive system itself, but as we have already suggested, through this also bring about a general weakening of the entire body.

Vices of this kind are particularly destructive during boyhood and youth, when proper growth absolutely depends upon the functional integrity of these parts. The younger the age at which these devitalizing habits are acquired, the more disastrous the results. Obviously, the seminal secretion cannot be absorbed for constitutional uses when it is discharged and carried out of the body. Masturbation, on account of being so extensively practiced among the young, is rightly regarded as the most serious of all evils of this kind. It is the greatest curse of all because it robs thousands upon thousands of young people in every locality of their birthright of manhood even before their bodies have been fully formed. The slave boy of the Orient is made a eunuch by a brutal and dangerous operation at the demand of his masters, but the boys in our civilized, free countries, in large numbers, gradually emasculate themselves.

The victim of self-abuse, when the habit is carried very far, shows the same lack of virility as the eunuch, a similar progressive dullness of mind, and lack of mental or nervous energy, the same timidity, as a rule, and the same or even a greater physical weakness and lack of resistance to disease. The subject of *Masturbation* is specially considered in the preceding chapter, and it is unnecessary to enter into further details at this point, but it must be taken into consideration here because of its important bearing upon the general subject of virility building. Other forms of abuse of the procreative function, such as excesses at any time of life, or even the ordinary excitement of the sex passion in too early youth and its premature gratification, will be found antagonistic to virility and exhausting to the general vitality of the body. Likewise the venereal diseases, *gonorrhea* and *syphilis* (see Chapter VIII) are powerful foes to manhood, not only because of their directly destructive and weakening effect, but also because of the complications and subsequent chronic disorders for which they are responsible. But even with all these, masturbation is still the greatest of all evils in depriving young men of their manhood.

In many cases this vicious and secret habit is more disastrous by far than the simple result of castration, for with the latter the harm stops with the weakening and unsexing effect of the operation. The eunuch is only deprived of the invigorating influence of the secretions of the glands. But with the persistent masturbator there is added to this lack of the reabsorbed secretions an additional drain of vital energy from the system. There is a continuously greater and greater strain upon the nervous system, combined with repeated irritation and congestion of the generative parts. The victim, therefore, may not only become impotent and unsexed, but he may suffer from varicocele, chronic prostatitis, atrophy of the organs, and other local disorders (which see in Chapter VIII). More than this, he is sure to suffer from nervous and constitutional breakdowns which may be in some cases far more serious than the merely passive weakness of the eunuch.

Let the young man, therefore, now made conversant with these truths, and perhaps some day to be confronted personally with the various devitalizing practices common to his fellows, ask himself what course of life he will choose. Let him ponder well whether he will decide to remain clean and chaste and continent, or whether he will waste his manhood and his strength, with all most precious that life holds for him? Does he prefer the fiery spirit and the tremendous energy of the powerful bull, or the slow stupor of the lethargic, less-enduring ox? Does he desire his muscular fibers to be fine and firm, and tough as bands of steel, or is he willing that his muscles and other bodily tissues shall lack in density and strength, perhaps some day making more tender meat for cannibals or deep sea fishes, even as the steer makes more tender meat for ourselves than the unchanged bull? Does he choose to be a man, in every sense of the word, or a self-made eunuch, even in part, with the strong, sound mentality, courage and physical vigor of the one, or the humility, timidity and debility of the other? Is he going to be a positive, active force, or merely a negative quantity, lacking in any semblance of force? Is he going to be a helpful factor in human society, or only a drag, a misfit and an unfit? Does he, in short, choose to be somebody or nobody, a question which in so many cases is determined entirely by the question of the possession or lack of virility? And finally, is he going to fit himself properly for the great responsibility of fatherhood, and make himself a personality and a character that young men and young women will some day be proud to call Father, or does he choose, stupidly and foolishly and viciously to throw away this greatest of all privileges and pleasures, making himself by his folly both unworthy of and incapable of fatherhood?

The premature exercise of the procreative function is highly antagonistic to its fullest ultimate development. The reproductive impulse should not be aroused or indulged before complete physical maturity. In the case of a great many this would mean an age of twenty-three to twenty-five years, for although the full ultimate height may be attained several years before this, the mere stature does not mean that the body is completely matured in other ways. There is usually a filling out of all parts, a broadening of the shoulders and general frame, and a continuous gain in the strength and size of the bones for some years after reaching the normal height. In many instances the body continues to develop more or less up to the age of twenty-eight or thirty years. If the sexual powers were strictly conserved until this period of complete maturity, under healthful conditions, then the result would be a degree of manhood and general constitutional vigor that should make any young man a power in his community. It would mean not only a powerful physical organism, but also the fullest and most vigorous mental development.

The importance of physical maturity and perfect health for the sake of vigorous sexuality is the same among human beings as among plants. We all know that it is the healthy, full-grown, vigorous plant that bears the perfect flower and fruit and gives forth healthy seed. One does not expect that the flower, representing the reproductive center of the plant, will be full and splendid of bloom when the general condition of the plant or tree is one of immaturity and under-nourishment, when it has been deprived of water or sunlight, or when it has been subjected to abuses of any other kind which have blunted its growth or interfered with its welfare. In the same way we should not expect a normal, complete or vigorous condition of the sexual organism of a man when his body is only partly grown, or when later in life he is lacking in all-around strength and energy. And yet how often do we not see a creature who is little more than a mere apology for a man, entering into the marriage relation and presumably expecting to take upon himself the responsibility of parenthood. In some such cases a normal development may have been attained and lost, and in other instances they may never have reached the full development intended by Nature.

Having arrived at maturity physically sound and in vigorous health, an early marriage thereafter is to be recommended, but marriage in the tender years of youth is a great mistake, both for the sake of the contracting parties and for the sake of the children. Extensive studies in England have led to the conclusion that on the average the first born children are not as sound as those that come later. This is probably not simply because they are first, but rather because the parents in some cases are more or less immature when the first child comes, those born later being the product of more fully developed and vigorous parental organisms.

The fruit grower knows only too well the disadvantages of allowing his plants or trees to bear fruit too early. The orange tree, when left alone, may bear fruit in two or three years, but the fruit will be inferior and the strength of the growing tree is thereby much reduced. By carefully preventing the tree from bearing oranges until it is four or five years old, well-grown and strong, it can be made to bear superior fruit, and without detracting from its own strength. The strawberry plant, left to itself, will early throw out runners and produce small, imperfect fruit, but by cutting off the runners and postponing the production of fruit, the plant continues to grow in strength until finally it is capable of yielding large and superior berries. The premature tapping of young sugar trees likewise saps their vitality, with the result that they either die early or are inferior for lumber.

It is just so with the young man. The very fact that his generative system is capable of functioning at or soon after puberty does not mean that such activity is the intention of Nature, or that it is consistent with his general welfare. We do not attempt to justify child labor in our factories just because a child is able to walk and run and use his hands and is therefore capable of being forced to work. If we are wise, we will treat ourselves and those who come under our care or influence, at least as well as the fruit grower treats his plants and trees. Surely, every prospective father should desire, on the one hand, that his offspring shall have the very maximum of vitality, and on the other hand, for his own individual sake, should see to it that he does not lessen his vitality and handicap the development of his virility by premature marriage or other early indulgence. For infinitely worse than early marriage is the all too common practice of promiscuous indulgence by foolish and uninformed or misinformed young men. I have discussed the subject of *continence* generally in connection with the broad aspects of sexual hygiene in Chapter II of this volume, but the continent life is particularly important during the period of a young man's development.

Let the recklessly inclined youth take notice that whatever his dissipations he must expect at some day to "pay the fiddler." It is the inexorable law of Nature that the premature activity of the sex function, or the abuse of it through excesses at any time of life, means also the premature loss or deterioration of the function.

Virility should last as long as life. There are plenty of instances of strong and vigorous old men, who, having lived normal and temperate lives, have retained their manhood and procreative powers to the very end of their long and useful careers. Men in such cases preserve their mental faculties in all their vigor and alertness, carry themselves erect and retain a splendid degree of general physical strength to the very end. We know of one man who at the age of eighty years became the father of twins. He was a progressive physician and had always lived a natural, healthful life, conserving his powers as any wise man should.

To retain virility to the last declining days of age requires not only that one must not abuse himself and exhaust his energies through the reproductive channel, but that he must also live a natural life in other respects, avoiding all debilitating habits and taking such exercise as may be necessary to maintain his muscular and nervous vigor. Virility or its lack, even in old age, is indicated by and chiefly depends upon the constitutional condition of the individual.

Excess in Adult Life.—I have given special attention to the influence of masturbation and the effect of early sexual gratification because of their prime importance. But although adult manhood is capable of a far greater drain upon the system without harm, this does not mean that free indulgence even at this time can be permitted without a lessening of vitality and manly vigor. It does not matter whether the waste of energy takes the form of excesses legally practiced within the bonds of marriage, or unsanctioned gratification elsewhere, for the drain upon the nervous system and the general vital exhaustion are just the same. The world is full of men who are nothing short of physical wrecks because of this sexual intemperance. We see them on every side, men who are not more than half men, and sometimes not even that—gaunt, nervous or nerveless, their limbs shrunken and weakened and their strength not that of a normal child. Muscularly they are pitiful, and their general appearance suggests the apt phrase of Kipling, "A rag, a bone and a hank of hair."

What, then, constitutes excess? Authorities differ upon this point, although it is generally admitted that this is a question that depends very largely upon the individual. As we have seen, any indulgence at all in the early periods of growth must be regarded as excess, but for the ripe years of adult life it is sometimes said that a greater frequency than once every two weeks may mean excess in some cases, while twice a week might not involve any undue drain in other cases. Obviously, a vigorous, full-blooded individual may gratify his sexual impulses more frequently than a nervously inclined man of limited vitality, without suffering any material loss of strength. Of course this does not mean that intercourse twice a week is recommended even for the strongest, or that it will be of benefit to them. Generally speaking, and without attempting to lay down arbitrary rules for any one in this matter, it may be said that the average man would do well not to exceed three or four times a month.

One guiding principle to be kept in mind is that if the procreative act is followed by a sense of weakness and exhaustion, or perhaps by a feeling of nervousness, possibly causing an inability to sleep, then this indicates excess. If such is the case even when the indulgence is infrequent, then it indicates that any connection whatever is too much of a drain upon the vital forces and that it would better be avoided entirely until a more robust state of health has been acquired. If, on the other hand, cohabitation is followed by a sense of refreshment and vigor, if it seems to act as a general consitutional tonic, if the nerves are left quiet and without a sense of tension, and there is no interference with the ability to sleep, if at night, then it is probable that there has been no undue drain upon the system.

Without doubt the most important factor to be considered in this question as to what constitutes excess is the circumstances under which the connection takes place, especially as regards the active participation of the wife. A passive submission upon her part makes the act an unnatural one.

I have pointed out what we may call the physiological laws of sex and marriage in Chapter II of this volume, and it is unnecessary here to repeat or go into details upon this point. The reader will remember that a normal sexual life depends upon strictly following the dictates of womanly instinct, and that these will naturally forbid any intimacies except during a certain period of the month, the period at which the reproductive force in the woman is active and during which she is likely to become pregnant as the result of such relations. In other words, immediately before and for some days following the menstrual period her creative or sexual impulses are strong. At this time it is natural that she should be receptive to the approach of her husband and in a condition for active participation in the procreative act. Under such circumstances there is a return of magnetism which seems to offset the loss entailed by the discharge of the seminal fluid. Greater frequency of indulgence than we have mentioned above may perhaps be permitted at this particular period and under these circumstances of mutual co-operation in this culminating act of creative love.

Remember, however, that it is imperative that the man in the case should be guided entirely by the instincts of the woman. No connection should be permitted except when the reproductive force of Nature, expressed through the female organism, makes it urgently desired upon her part. For the husband to make use of his wife's body as a mere tool to his own gratification, while she on the other hand feels no stirring of passion, but passively submits, is an outrage upon both her person and her dignity as a potential mother, whether she recognizes it to be such or not. It is the most damning and yet justifiable criticism of our conventional system of marriage that this is a common practice. But enough has been said of this in another place. The point here, in its relation to the question of virility; is that this lack of participation in the act upon the part of the woman, and the consequent lack of the return of that element of magnetism which justifies and makes beneficial a normal connection, make the proceeding for the man little better than the act of masturbation. Instead of being a proper exchange of magnetism, it is only a mechanical gratification. Continued indulgence by the man under such conditions, the woman submitting only because of her misconceived notion of wifely "duty," is bound inevitably to work havoc with his sexual and nervous system, while at the same time giving rise to conditions of irritation, inflammation and progressive weakness upon the part of the abused female organism. Such indulgence is excess, and highly detrimental.

For similar reasons, if for no other, the attempt at satisfaction through the aid of the prostitute would be condemned. The immorality of the thing is obvious, making it an unpardonable offense in any case. Furthermore, the certainty of contracting one or the other of the venereal diseases, perhaps more than one, with all the horrors, sufferings and far reaching consequences that they involve, makes such a course so disastrous that any man, young or old, is not only a fool so to debase himself, but he also commits a crime against himself and others. But apart from all such major considerations, one should understand that in the end he also partially defeats his purpose of complete gratification, for there is no return of magnetism. The prostitute is interested in only one thing, the payment of her price, and her service is worth little more than the merely mechanical excitement of masturbation. The frequent patronage of the prostitute would be antagonistic to the preservation of virility for this very reason, in addition to the even more physically destructive influence of the venereal poisons.

In many cases the astute man, more careful of his person, turns from the prostitutes to secure a mistress, or perhaps in his sophistication seeks the latter without ever having endangered himself through the former. From the standpoint of health and hygiene this is a far less objectionable plan, for aside from the lesser danger of venereal infection, the element of personal interest upon the part of the mistress in her lover will lead her to be an active rather than a passive participant in their relations. Remember, however, that even in the case of the mistress the act is unnatural except during the limited period of each month that we have mentioned. If she yields at any other time, without her own passionate interest in the affair, then the relation is a perversion the same as any other violation of the laws of Nature governing these matters. Besides, there always remains the fact that the immorality of the relation puts the use of the mistress out of the question for any decent and self-respecting man.

In passing, we may say that the clandestine prostitute, who plies her trade under the cover of assumed respectability, is the most dangerous of them all. She should be avoided as one avoids the plague.

There is only one safe rule in any case. A life of chastity is to be recommended not only for the young man still in the course of his growth, but also for any unmarried man. Even the marriage relation should be kept sweet and wholesome and normal by the observance of a high degree of temperance and chastity, even if not of strict continence. Continence is always conducive to virility and except under the happy and natural conditions of an ideal marriage should be the strictest guiding principle through life.

Sexual starvation is a term that sounds well, but it means far less than would seem at first thought. It is one of those false and misleading phrases which are capable of doing an infinite amount of harm, but never any good. It is true that marriage under right conditions, lived in accordance with the physiological laws which I have pointed out, is the healthful and normal condition, and it is natural that virile and vigorous manhood should ultimately turn to the benefits of a pure marriage relation, but at the same time it is not to be said that continence is injurious. A man may live an absolutely continent life for years and years, or for his entire life, with but very little lessening of his sexual powers and no decline in the state of his general health. On the contrary, he will probably find himself all the stronger because of it, his creative energy being diverted into other channels, perhaps into the form of unusual mental activity or thoughts that benefit the whole world. He saves energy where others waste.

Even if one were sceptical as to the reabsorption of the germinal fluid when it is not discharged, the advantages of continence would still be indisputable. It might seem that it would not make much difference whether the seminal fluid were secreted and then reabsorbed, or whether the secretion were discontinued under conditions of continence, for in the latter case the system would still retain the rich and precious chemical elements of which the semen is composed. In either case, the body is the gainer under conditions of continence, while on the other hand the discharge of semen takes out of the blood these most valuable elements. The continent man also avoids the waste of nervous energy incidental to sex excitement. It is the only life for the unmarried.

The doctrine of the physical necessity for men may be branded as a pernicious and most dangerous lie. There is no such sex necessity. It is in part through the misrepresentation of this vicious doctrine that the hideous social disease of prostitution is enabled to maintain its hold upon humanity. Young men everywhere, and even boys, under the shadow of the great veil of mystery thrown around the entire domain of sex, are taught to believe this detestable theory. (See also Chapter II, discussing *Continence.*)

However, this question of the sex necessity brings us to another interesting and important phase of the subject, namely, the supposed force and constancy of the sexual appetite in some cases. An intense sexual craving does not necessarily indicate a healthy and normal passion, but is more likely in some instances to indicate a condition of disease. The most virile men are often those who are unconscious of their sexual nature except under the unusual conditions which naturally tend to arouse it. They may be exceptionally vigorous in a sexual way, as in their general health, but thoughts of sex do not enter their minds at all times or encroach upon their working hours, and it is partly on this account that they are vigorous in this respect. They do not experience the frequent and prolonged sense of sexual excitement that may be felt by others of infirm health.

How often have we not heard even sickly people boast of being "very strongly sexed?" It is not at all uncommon among both men and women. The supposedly "strongly sexed" person likes to give the impression that he is compelled to struggle against a powerful and overmastering passion, but first it would be well for him to make sure that it is passion, and not a state of irritation arising perhaps from some form of inflammation, possibly due to uncleanliness. Or let him make sure that it is not a mere habit of mind. In very many cases the "strongly sexed nature" is only constipation, or an expression of the irritation due to this disorder. Great numbers of neurotics, sexually and mentally unbalanced, cherish this delusion that they are peculiarly gifted by Nature with these very marked sexual impulses. The neurotic is very likely to be erotic.

Aside from local congestions and irritations which may excite the generative system, many constitutional diseases are frequently associated with what may be misconstrued to be an ardent desire. It is found to be a nearly constant symptom in many cases of pulmonary tuberculosis, and the consumptive is likely to be exceptionally persistent in his desire to secure intercourse. Yet there is no condition in which gratification would be more harmful or strict continence more advantageous. Similarly, some chronic skin diseases, slow poisoning by diseased rye flour, leprosy and various other serious maladies are attended by much excitement of the generative system, which is readily misinterpreted as passion. Epileptics, plainly neuropathic, are often especially prone to sexual indulgence. Feeble-minded persons, obviously defective, and the victims of unsound inheritance, are very much given to the practice of masturbation and other perversions. So that saying too much about being extraordinarily "well-sexed" is more or less suspicious, whereas if you are athletic and of fine physique, every inch a man, you will be likely to forget for most of your time that there is such a thing as sex, and it is well that you should do so.

If your passion is a powerful but genuine one, and is aroused in all its force in connection with a true and pure affection, which culminates in marriage, then you may be satisfied and glad that it is so, even though it is necessary for you to exercise the most rigid self-control. (See also discussion of *Kissing* and *Love-making* in Chapter II of this volume.) Do not adopt the attitude of regarding it as your "lower nature," and something to be ashamed of, something to be "crushed out" and hated as base. It is base, or is made base, only according to the use to which you put it, only as your own behavior in connection with it makes it something to be ashamed of, and even then, it is your conduct that you should be ashamed of, and not the sacred procreative function. Sexual passion is a natural and legitimate force, the race-instinct working itself out, and though necessarily kept under the bonds of restraint, is not to be despised or held in contempt. Its Divine purpose as the instrument of fatherhood, with all that the latter means, is not to be lost sight of.

If it is really true that you have a powerful sex nature, then glory in that fact. Be proud of your virility. Rejoice that you are indeed a true man, in every sense of the word, and then make up your mind to use your manhood in some worthy manner. Do some big, ambitious thing. If your work is only of an ordinary kind, then determine nevertheless to do that work better than any one else. Make up your mind to be somebody in this world where nearly everybody is a nobody. But if your supposedly powerful sexual appetite is the expression of some physical disorder, or if it is largely the result of stimulation through diet or drink or drugs, or perhaps the result of mental stimulation through the reading of erotic and sensational literature, then make up your mind to live a more natural and wholesome life, and to fight your way back to a normal and vigorous state of health.

FOES TO VIRILITY.—We have already seen that virility may be decreased or lost as a result of abuse of the sexual system itself, through masturbation, excess or premature indulgence, or as a consequence of the special disorders and diseases taken up in detail in Chapter VIII, indeed, all destructive influences

Bernarr Macfadden's physique at 51 illustrates the effectiveness of the methods advocated by him for prolonging youth and conserving vitality.

which directly affect the generative organs. But all influences which tend to undermine the general health and weaken the body as a whole, must also be reckoned among the foes to virility.

Physical weakness, no matter how induced, is necessarily antagonistic to either the development or maintenance of virile manhood. Therefore, the causes of a decline of sexual power may include such important factors as lack of sufficient exercise, confinement indoors, sedentary habits, overwork, especially of a mental and nervous character, a lack of sleep, late hours, unwise or exhausting "recreations," and all similar weakening influences.

Alcohol and tobacco, the twin poisons used so extensively among men in all civilized countries, are especially destructive to virility. So much has been said of their health destroying qualities in other parts of this work that we cannot elaborate upon them here. It should be noted, however, that they particularly affect the nervous system and the generative system, and should be religiously eschewed by every one striving to attain the highest degree of manly vigor.

Drugs and stimulants of all kinds are particularly potent in their baneful influence over the sexual powers. Cocaine, opium and other active poisons have a particularly paralyzing effect in this direction, although in all other respects, as we know, they soon bring about a condition of hopeless physical, mental and moral degeneracy. Some drugs may seem to have a temporarily stimulating effect upon the sexual system, but ultimately result in a very marked lessening of power. Nearly all medicines, and even such comparatively mild stimulants as tea and coffee, steadily used, have a pronounced detrimental effect upon this very important part of the bodily organism. Even condiments and meats, because of their stimulating qualities, may be undesirable in cases of weakened manhood, though their influence may not be appreciable in the case of very vigorous health.

Diet and *digestion* are closely related to the general subject of virility, for any faults in the one or impairments of the other will have an immediate and marked effect upon the sexual powers. *Dyspeptics* are notoriously weak in a sexual way, and it is only natural that it should be so, since the welfare and strength of every part and function of the body is primarily dependent upon the requirement of satisfactory nutrition. An impoverished blood supply, due to digestive failings or disturbances, is absolutely inconsistent with a high degree of virility or of that measure of general constitutional energy upon which virility depends. Constipation has already been mentioned, not only being detrimental to sexual vigor because of its general effect upon the body, but also exciting the generative system by direct pressure upon the prostate gland and seminal vesicles, and in many cases acting as a contributing cause to varicocele. (See Chapter VIII.)

Disease of almost any kind impairs the sexual power, though disorders of the spinal cord like locomotor ataxia, and various brain diseases especially paralyze this function. Other general causes of failing virility are considered in Chapter VIII, under *Impotence.*

If space permitted one could enumerate an extended list of conditions and influences antagonistic to the development or preservation of virility, for they would simply include all habits and conditions of life which tend to make the blood impure, interfere with perfect elimination, exhaust the vital forces of the body or cause disease in any form. The enumeration of the various general causes of disease in an early part of this work includes them all.

Mental Influences, however, require special consideration, for they are in many cases the most important of all factors in the destruction of manhood, not only through their direct effect upon the centers of sexual excitement, but also because they lead to habits and practices of a weakening and unsexing nature. There is a most intimate connection between the mind and the sexual system, and amorous thoughts in the one lead to an immediate excitement and congestion of the other. Sensational novels and erotic plays, salacious vaudeville acts and suggestive pictures, vulgar jokes and indecent stories, not forgetting veiled and insinuating newspaper reports, all tend to inflame the mind and passions of one who eagerly looks for sensationalism of this kind, though only disgusting and revolting and devoid of suggestiveness to one whose attitude is one of decency and who has a due respect for his person and all of his functions.

Chastity is primarily a matter of the mind. Keep the mind pure and purity of body is an easy matter to maintain. But allow the mind to dwell fondly and eagerly upon the sensual side of life, and it will not be long before such thoughts will become confirmed habits of mind. To the man whose mind is so polluted, everything that he may see or hear or read is somehow or other suggestive; every attractive member of the opposite sex awakens in him only lewd thoughts. It is like the rut in the wagon road. The longer the mind acts in a certain groove, the deeper it becomes, until finally it is impossible to get out of it. The groove becames a chasm, a canyon, ultimately dominating the entire mind and soul of the individual. Such is the way of mental habit. Persistence in erotic fancies leads to erotomania, a psychopathic or diseased state of mind, in short, insanity upon the subject of sex, and perhaps also insanity in other directions as well. We must remember that the evil practices which invariably accompany such an erotic state of mind, themselves produce such a derangement of the nerves as would tend to produce insanity, particularly when there are neuropathic tendencies in the family.

It does not matter whether this licentious habit of mind is found in the person of the foolish youth, the worldly wise old roué, or the equally sensuous husband, it dominates him none the less completely. To the husband of this type, the wife comes in a short time to mean, not a personality, not a companion, nothing more than a mere sex-tool to gratify his perverted and abnormal desire. Passion under such circumstances loses the dignity which in the eternal and sacred scheme of life belongs to it, and becomes mere animal lust.

But the fire that is constantly fanned will burn out quickly.

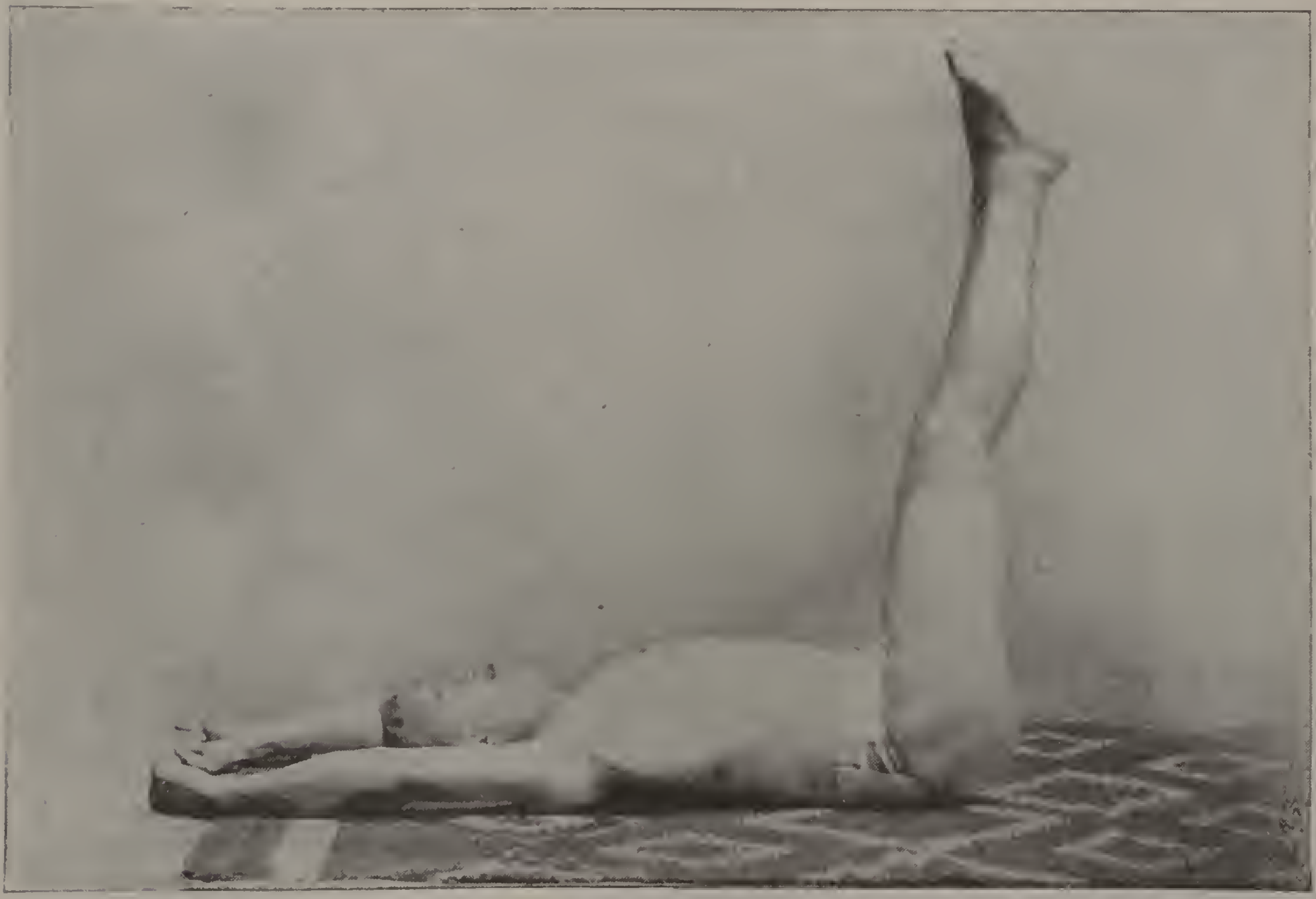
The man who lives this abnormal life becomes prematurely impotent. Another result is to blunt his real sex sensibilities, so that the voluptuary, in his mad pursuit of pleasure, only succeeds in defeating his own ends. From his own point of view, he would have done better to conserve his powers and direct his mind to other things. Even before he knows it, the vigorous instinct of passion has been displaced largely by the mere force of habit, which, without the impulse of any real desire, continues on in the same old way. Just such is the state of affairs in many miserable marriages. And so persistent and deeply rooted is his licentious state of mind that even after he is impotent he continues, wretched, senile and incompetent, to revel in his vulgar, debasing dreams.

The cure for this psychopathic condition, this sex-maddened state of mind, is a difficult matter in many cases, the difficulty increasing according to length of time that the victim has cultivated his erotic point of view. There is only one cure and that is an absolute and complete adoption of the physical culture life together with the endeavor to practice strict continence. It is well to seek the society of pure-minded people, to interest oneself in athletic sports, music, art, literature and all of the finer things of life, and to resolutely shut out of the mind every thought of sex or of matters pertaining to it. A general vitality-building regimen will be necessary. All habits should be broken off completely. All this will be difficult. It will require that you fight with all your might and main to overcome your weakness, to get your mind out of its groove of sensuality. You may fail again and again, many times, but your only salvation will be to keep on fighting, meanwhile building up your body to the strength and semblance of perfect manhood. Greater physical strength will give you increased mental strength and better nervous control.

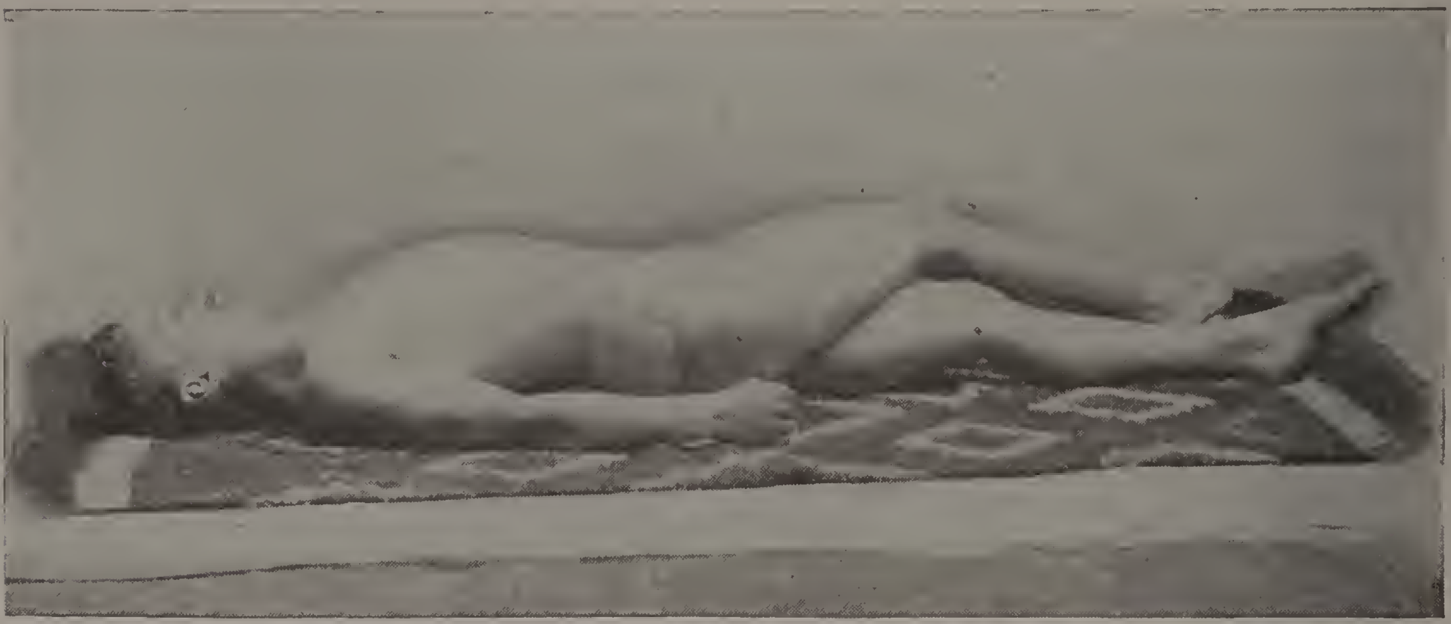
The great difficulty in overcoming not only a habitual state of mind, but all habits of conduct, is chiefly of a mental nature, growing out of the fact that the mental impulses toward them have become so firmly fixed, and that misdirected energy always tends to continue to find its outlet through the accustomed channel. Therefore, a fight against any of these evils, just as that against the mental habit of erotic thought itself, must be largely a mental struggle. I say this because I wish to emphasize again the urgent necessity for putting out of the mind any thought of sex, and in the case of youth, to begin right by taking a wholesome, natural view of this sacred function, by understanding it, and by refusing to entertain, even for a moment, any vulgar conception of it or impulse of sensuality. (See also *Prudery,* Chapter II.)

Virility Building.—The building of manhood is really a simple enough matter if one is willing to make a serious and conscientious effort in the right direction. It will naturally depend upon methods of treatment and constitutional improvement that, to a great extent, will have suggested themselves from the foregoing discussion of the causes of impaired virility.

Regaining lost manhood is an assured possibility. The man who has suffered the loss of sexual power, perhaps by mistakes in the form of the abuses to which we have referred,



Exercises for Virility Building. No. 1.—Recline on back. Now grasp hold of some object behind the head, then raise both feet as high as you can.



Exercises for Virility Building. No. 2.—Recline on back. Then bring right leg with knee straight as far as possible over left leg. Same exercise with left leg.

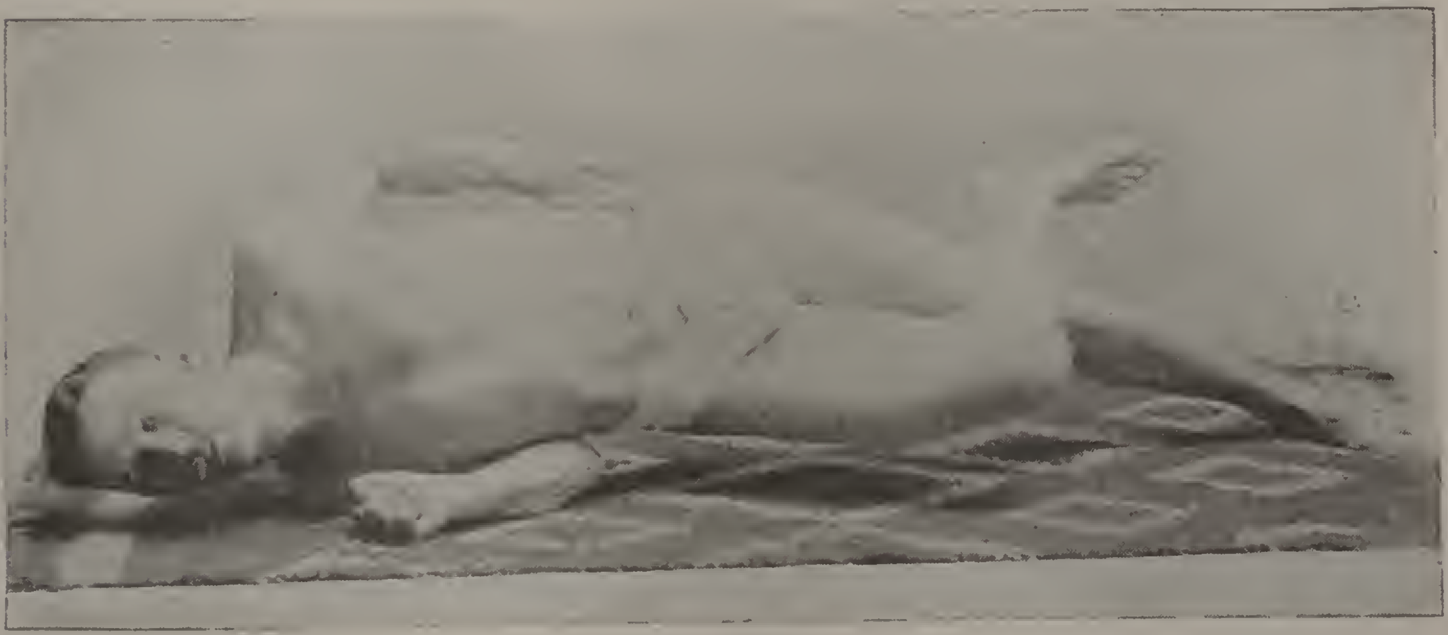
may have sacrificed so much of his inherent stock of vitality that it will be impossible for him ever again to be quite the man that he might have been if he had always lived a normal, healthful life. But the very fact that he is still alive means that he still has a substantial store of vitality with which to go to work to repair the damage done, and by persistent and faithful endeavor he may unquestionably acquire, if not the maximum of virile power, at least a satisfactory degree of manhood. The climb up the hill may be hard and long, but if he will only *make up his mind to conquer* his weakness, and will stick to the task, he will eventually be successful in attaining a degree of virility which will make happy married life and the blessings of fatherhood possible for him.

His only hope, however, lies in physical culture methods. Medicines are worse than useless, and the only service a doctor could give would be to advise a proper course of exercise and other hygienic measures for constitutional building up.

The quacks above all things should be avoided. Their only purpose is to enrich themselves at the expense of ignorant young men. It is the trick of the quack to frighten his victim into a belief that his ailment is infinitely worse than it really is, or to convince him that he has some terrible disorder when the complaint may be of no real consequence, and so to persuade him to spend large sums of money for the relief of the imaginary or exaggerated trouble. If the victim finally realizes that he has been swindled he dares not complain because "his secret" is in the hands and at the mercy of the quack. He naturally does not wish his intimate and private weakness known in public.

Electric belts are the greatest of frauds. To begin with, they are not really electric and cannot possibly have the effect desired or credited to them in the promising letters and advertising matter devoted to their sale. Similarly, other mechanical devices and all advertised or pretended remedies for the weaknesses of men should be distrusted and avoided.

Constitutional treatment. The only means of building virility is by strengthening and building up the body as a whole, purifying and enriching the blood, and in every possible way improving the general health. Any debilitating habits, particularly those which affect the generative organs, must be absolutely broken off. This is imperative. Even moderate sexual indulgence should be avoided, for strict continence is one of the first requirements for regaining a state of normal vigor. If one cannot entirely realize this ideal of complete continence, then at least he should keep it constantly in mind and do his utmost to approach it as nearly as possible. Especially if diseased in any way, he should avoid even the slightest waste through this channel. If he suffers from any chronic or serious ailment, this should be carefully considered



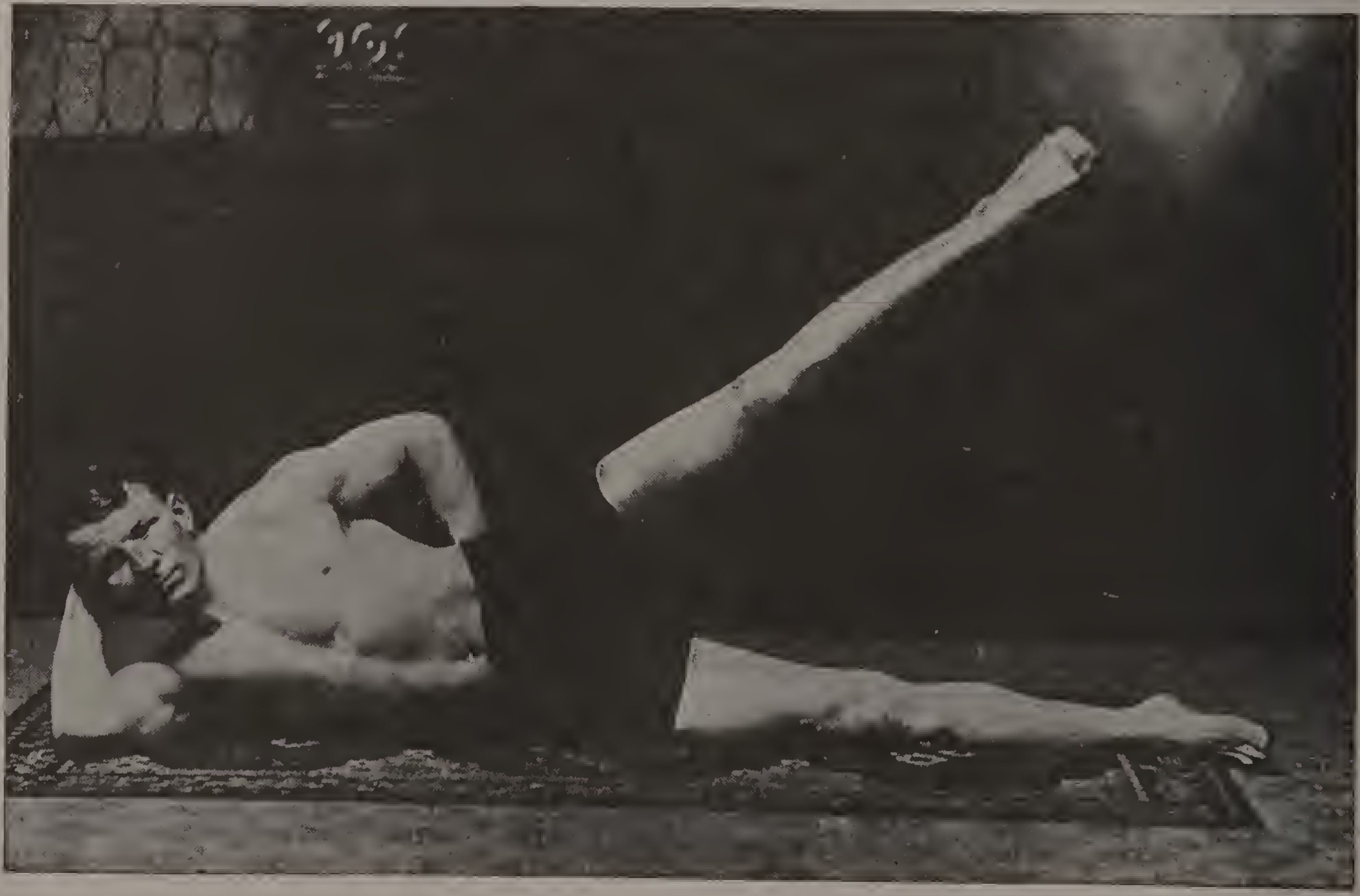
Exercises for Virility Building. No. 3.—Recline on right side. Cross the right leg at ankle over left leg just above knee, then raise the hips as high as you can, the weight resting on right shoulder and left leg. Same exercise reclining on left side.

and proper treatment for it, as outlined elsewhere in this work, should be adopted.

But having given due attention to any special diseases and to the question of injurious practices, all efforts should be concentrated upon the general building of strength and health.

Unconsciousness of sex, indeed, is a most important matter under such circumstances, as under any other circumstances. Don't worry about your trouble and don't keep continually thinking about the question of sex. The attainment of virility may be the fundamental object of your efforts, but simply forget that it is, and make your great conscious aim the attainment of rugged strength, nervous energy and all-around bodily health.

Importance of strength. I am illustrating in this chapter some special exercises which are of great value in connection with virility building, particularly for strengthening and invigorating the bodily structures and improving the circulation in the region of the generative organs. But in addition to these, all other exercises which help to strengthen the body as

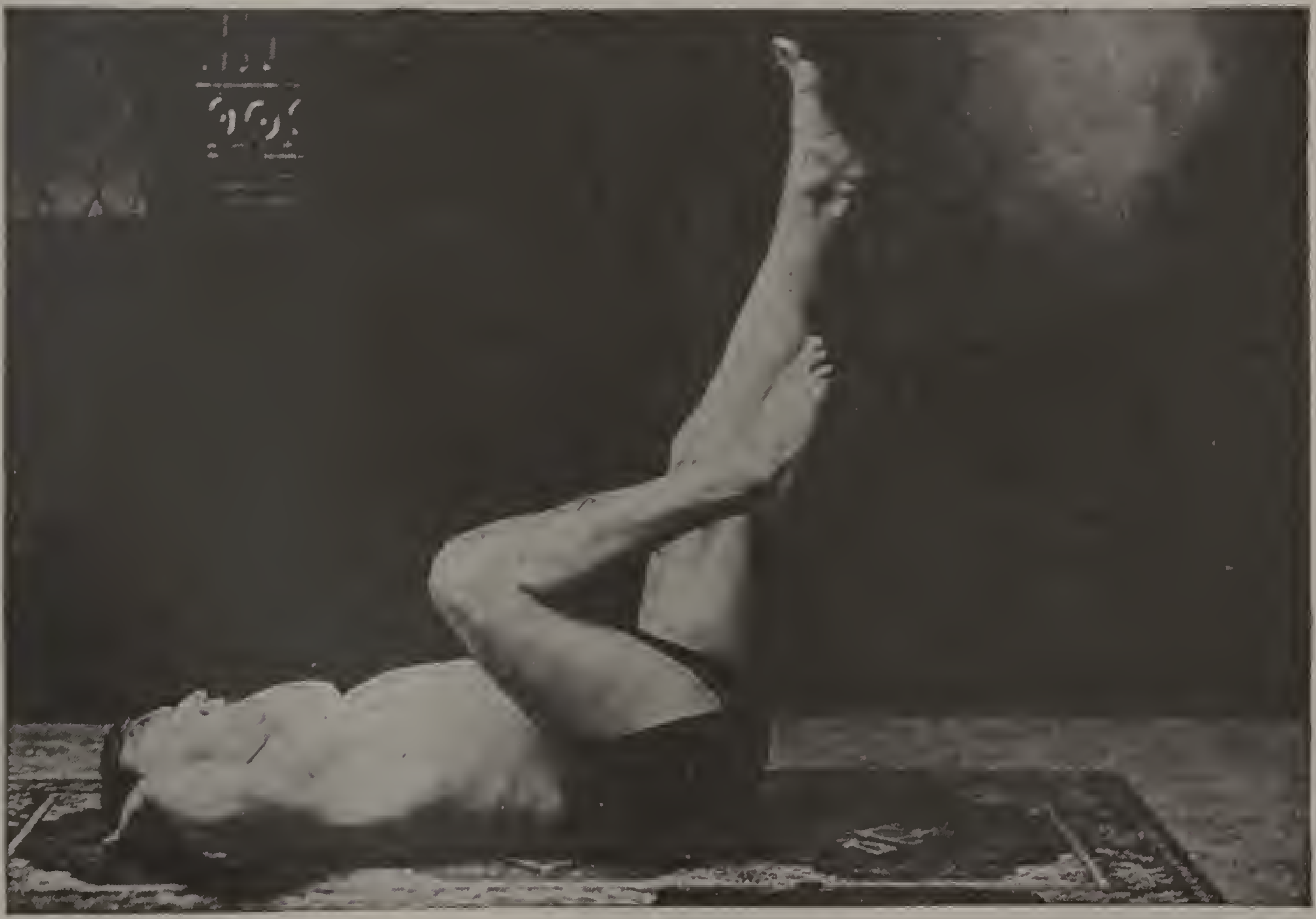


Exercises for Virility Building. No. 4.—Recline on the side. Then slowly raise leg with knee straight as high as you can as shown. Repeat until tired. Same exercise on the opposite side.

a whole and to increase your vitality and endurance are urgently recommended.

You should live out in the open air, play outdoor games, take up such athletic sports as your muscular condition at any time will justify. Let every fiber of your being become as firm and strong and tough as training and right living will make it, and although it should not be your object to break athletic records, yet if you ever reach the point where you will be able to do so, you may realize that you have attained a degree of manhood to be proud of.

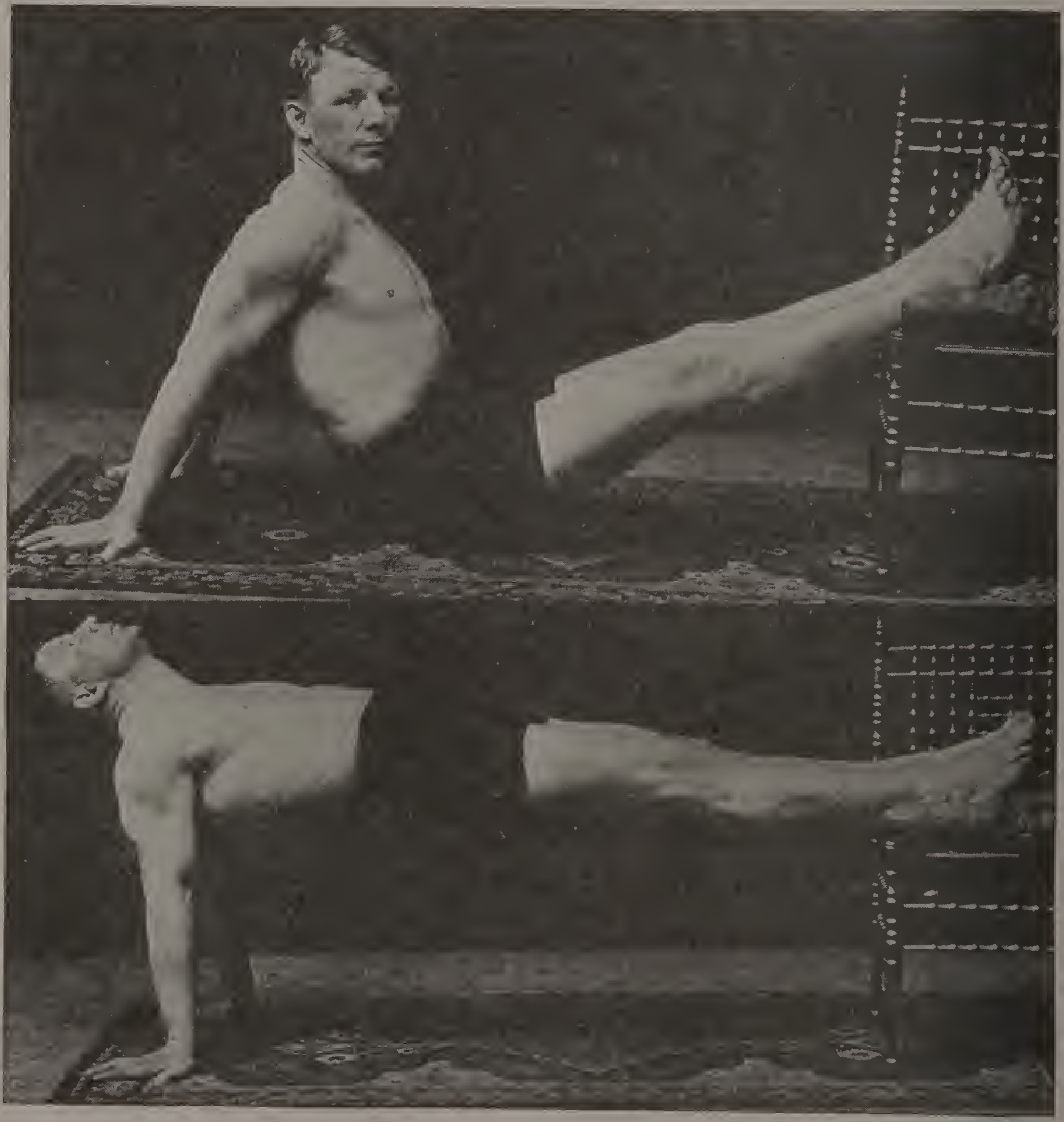
The difference which we have already noted in the comparative strength of the bull and of the steer, marked by the firm, dense muscular fiber of the one and the soft, flaccid, porous and "tender" flesh of the other, is strikingly suggestive of the relation of vigorous muscular development to perfect sexuality in the case of a man. Judging by analogy, one cannot help but conclude that the athlete is not merely muscularly more vigorous than his inactive and non-athletic brother, but



Exercises for Virility Building. No. 5.—Recline on the back and raise legs bending knee as much as possible and kick straight upward vigorously with right and left legs alternately.

also more virile as well. The suggestion which has sometimes been made by uninformed persons that muscular strength is cultivated at the expense of sexual power, and that very strong men are sexually weak, is utterly unfounded and no less than absurd.

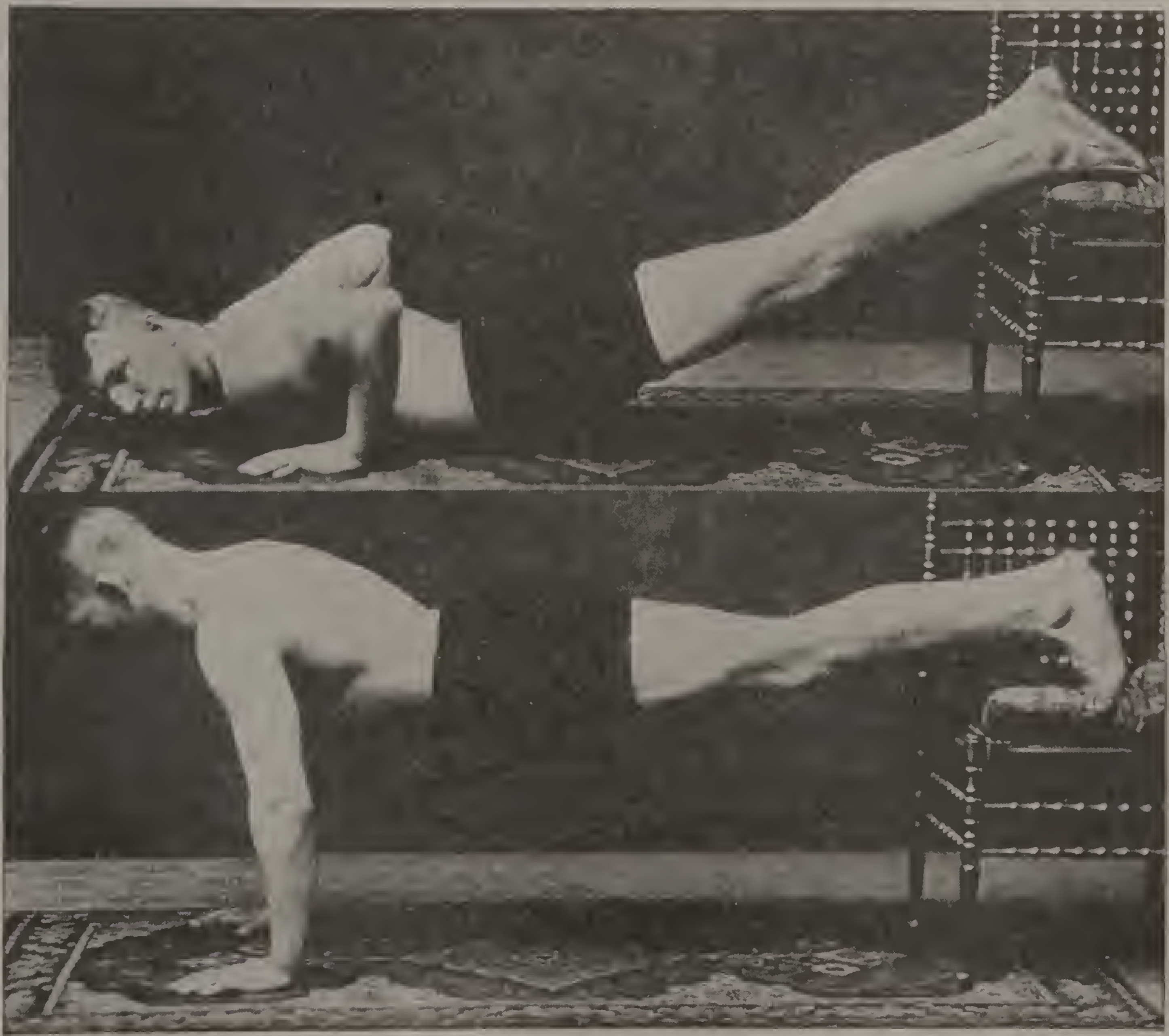
Cultivate your body, therefore, and when you have reached the classic proportions which the Greeks admired and made immortal as typifying their very gods, when, in short, your outlines have reached the semblance of true manhood, then you



Exercises for Virility Building. No. 6.—Begin in position shown in first photograph and stiffen the body as shown in second photograph. Repeat until tired. A variation of this exercise is to raise right hand from the floor while in position shown in lower photograph, and reaching upward as high as possible. Another variation is to raise the head upward (while in position shown in second photograph), then move it vigorously from side to side.

will know that you have indeed acquired that same degree of perfect manhood.

Nervous strength is as necessary as muscular strength, both as an indication or evidence of manhood, and as an object to work for in the building of virility. Nervous vigor and sexuality go together, and it is for this reason that I would particularly recommend the energizing of the nervous system through spinal stimulation. I have covered the general subject of spinal invigoration at some length in other parts of this work. Once each day I would advise one or two of the Physcultopathic treatments given in Volume III, suited to the strength and condition of the individual, but particularly Physcultopathic Treatments E, F and G. Any of the movements or man-



Exercises for Virility Building. No. 7.—With body resting on chest push upward as indicated in second photograph. A variation of this exercise can be taken by beginning as shown in second photograph, keeping the arms rigid and bending the central portion of the body downward as far as possible, and next raising the hips as high as possible. Repeat the movement until slightly fatigued.

ipulations for the lumbar or lower region of the spine illustrated in connection with my presentation of Mechanical Physcultopathy, can be commended.

If in a very run down condition, perhaps suffering from what may be called *sexual neurasthenia,* which means neurasthenia particularly characterized by sexual debility, then the dietetic and general regimen outlined for the treatment of *Neurasthenia* in Volume IV may be followed closely, though possibly modified in some minor respects by the suggestions hereinafter given. The dietetic suggestions given there, however, will unquestionably answer satisfactorily.

If much emaciated or reduced in vitality, some radical dietetic measures will probably be necessary, of which the exclusive milk diet (Regimen 32, Volume III) is the most important and valuable. There is nothing like this diet for rapidly improving the condition of the blood and building vitality.

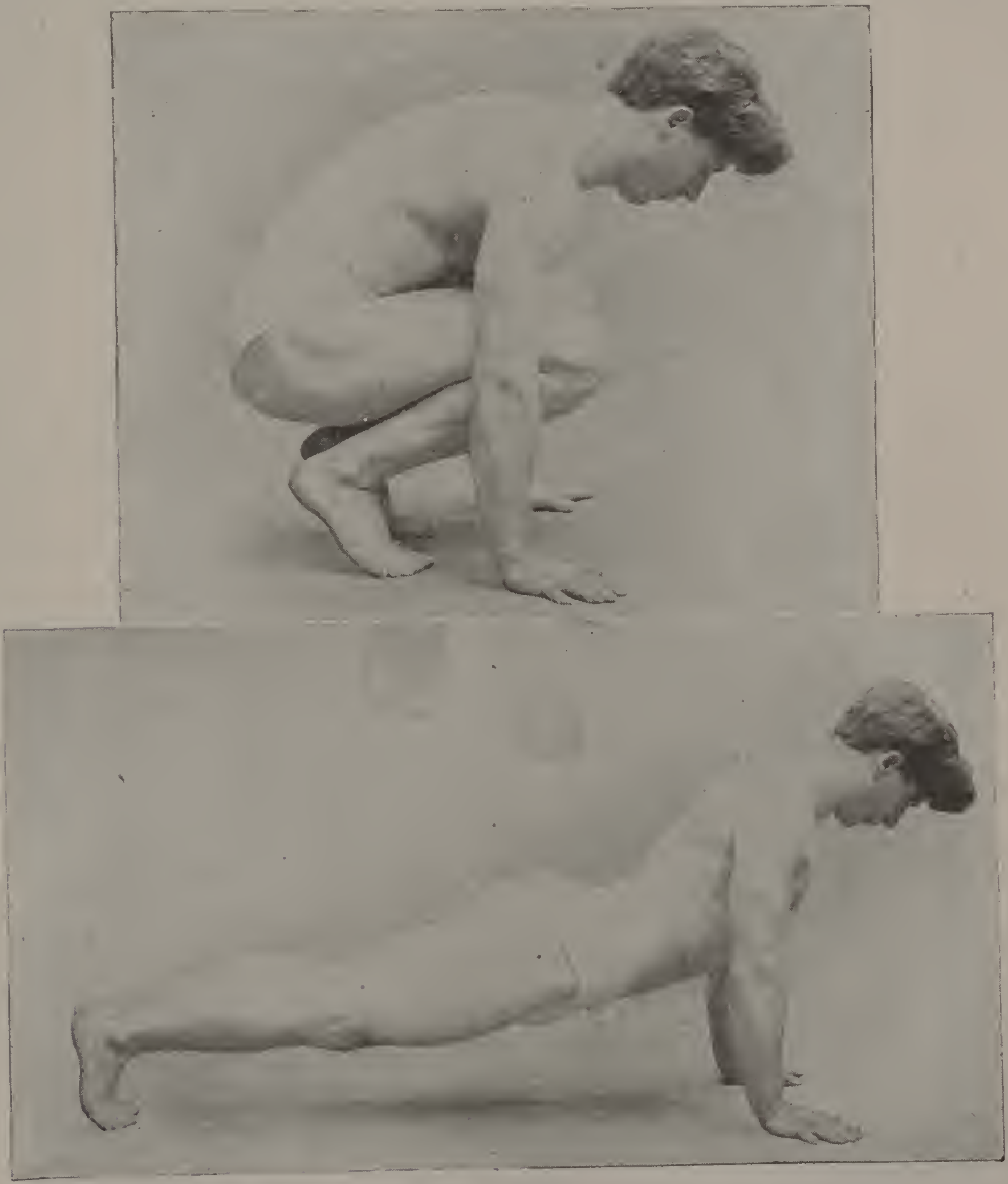
Cold water and cool air are invaluable aids in building sexual vigor, but though cold baths in any form are advantageous in this respect the cold sitz bath is particularly potent. It not only invigorates and strengthens the generative organs and the adjacent parts, but it also has a powerful influence upon the nervous system as a whole and as a general constitutional tonic. It should be taken once or twice each day, but never continued beyond the point where comfort and perfect recuperation will not follow.

Air baths are of great benefit, not only because of stimulating elimination through greater activity of the pores, but especially because of their quieting and strengthening influence upon the nerves. I need not speak further of them here, since they are discussed in detail in Volume III. The advantages of light clothing, and of apparel which does not constrict the body in any way, or overheat the body in the region of the genitals, is to be noted in connection with the practice of air baths at all convenient opportunities.

The same general principle applies to bed covering at night, which should never be in excess of that absolutely required for

The personal experience of Bernarr Macfadden attests the practical value of Physical Culture in maintaining strength and energy in the fifties as well as in life's earlier years.

warmth and comfort. It is well to retire first with only part of your intended or available covering, later in the night, as the heat of the body is diminished, pulling up from the foot of the bed such additional covering as may be required. The suggestions in this connection given in the preceding chapter and in Volume IV, with reference to masturbation and nocturnal losses, should be heeded.



Exercises for Virility Building. No. 8.—Squat down, placing the palms of the hands firmly on the floor, as illustrated in first photograph. From this position make a quick jump to the rear, with legs straight as shown in second photograph. Return to position, as in first photograph. Stand erect, and repeat exercise. Continue movement until slightly tired.

Sleeping alone is a most important matter, even if married. It is conducive to continence and better rest, and also diminishes the likelihood of overheating. A hard bed is always preferable, between two open windows, and the preferred position in sleep is on the side, or on the side and chest. (See reference to sleeping position in another place.)

Regularity of the bowels is indispensable to a satisfactory improvement, not only for the sake of the general health, but to avoid pressure which will excite the generative system. If there is any tendency toward constipation, see treatment for this complaint in Volume IV.

Daily long walks in the open air are always conducive to an improvement in manly vigor. The occupation, similarly, may have an important bearing upon the case. Those which are active and out-of-doors are naturally favorable to a much more rapid improvement, while those indoors, or of a nerve-trying character, will perhaps be found more or less of a handicap against which to struggle. Such conditions, however, make it all the more necessary to follow physical culture measures very strictly.

All of these various influences, as we have shown, are related to the problem of virility. Everything that tends to promote the general health tends to make a man a better man. Virility is the most important and precious possession of any man, and well worth fighting for to the last ditch, as it were, no matter how hopeless the case may appear. Virility means power and success in every field of action, it means everything, and if the weak man searching for it is only willing to drop his vices for the sake of something higher and better, if he is willing to make the ideal of sexual chastity the guiding principle of his life as related to matters of this kind, and if he is willing to strive with all his might and strength of mind, faithfully and persistently, to strengthen and harden every fiber of his physical being, then eventually he will be able to fight his way up to a condition of one hundred per cent. manhood, to a condition of which he may well be proud, because he has fought a good fight to attain it.

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GLOSSARY

This glossary has been designed to define only those technical and medical terms in use in this work. It will, accordingly, not serve the purposes of a complete medical dictionary.

A

Ablution—Act of washing or cleansing.

Abnormal—Irregular.

Abstinence—Voluntary refraining from indulgences.

Acceleration—State of moving faster.

Accompaniment—That which attends.

Acute—Severe, sharp.

Adipose—Fatty.

Adjacent—Lying near or next to.

Adolescence—Period between puberty and maturity.

Aerated—Impregnated with air.

Affusion—A pouring upon, as water on the body; to pour water on the body to cleanse or reduce fever.

Alignment — Arrangement in a line or lines.

Alimentary — Supplying sustenance.

Alkaloid—Pertaining to, or containing, alkali.

Alopecia—Loss of the hair; baldness.

Ameliorative—Tending to make better.

Ammoniacal—Containing, or having the properties of, ammonia.

Anaesthesia — Entire or partial loss or absence of feeling or sensation.

Anemic—Deficiency of red corpuscles in the blood.

Aneurism—A soft, pulsating, hollow tumor, containing blood caused by weakening of walls of an artery.

Ankylosis—Stiffness of a joint; union of the bones forming a joint resulting in a stiff joint.

Antagonistic—Opposing.

Anterio-posterior—In front and behind.

Anterior—Situated before or in front of, near or toward, the head.

Aorta—The great artery which carries the blood from the heart to all parts of the body except the lungs.

Apathy—Lack of feeling, passion, emotion, or excitement.

Arterial—Pertaining to an artery or arteries.

Artery—A blood-channel conducting purified blood away from the heart.

Articular—Pertaining to a joint or joints.

Assimilation—The conversion of nutritive material into the fluid or solid substance of the body.

Astringent — Drawing together the tissues.

Atrophy—To weaken by (fasting) starving. A wasting of a part from lack of nutrition.

Atropin—The drug of belladonna.

Aural—Pertaining to the ear.

Auricle—The external ear. One of the upper cavities of the heart.

Axilla—The armpit.

B

Bacillus—Any bacteria.

Bacteria—A vegetable group of micro-organisms.

Benign—Of a mild type or character.

Bile—A yellow or greenish fluid, produced by the liver.

Bronchial—Pertaining to the windpipe.

Bronchiole—A minute bronchial tube.

Bursal or Bursa—Pertaining to a sac-like cavity.

Buttocks—The parts at the back of the hip, the parts upon which one sits.

C

Cadaveric—Pertaining to a corpse.

Calcareous—Containing carbonate of lime.

Calculi—A solid concretion formed in any part of the body.

Calisthenics—The science of bodily exercise to promote strength.

Callosities—State or quality of being callous.

Capillary—A minute, thin-walled vessel, as a blood vessel.

Carbonaceous—Pertaining to, or composed of, carbon.

Cardiac—Pertaining to the heart.

Carotid—The chief artery of the neck.

Cartilaginous—Pertaining to cartilage; gristly.

Catheter—Tube-like instrument for emptying the bladder.

Catheterize—To introduce a catheter into the bladder.

Cauterization—Act of searing by means of a caustic.

Cellular—Pertaining to a cell or cells.

Cerebral—Pertaining to the brain.

Cervical—Pertaining to the neck.

Cessation—A ceasing; stopping.

Choroid—The second tunic of the eye.

Chronic—Continuing for a long time. The opposite of acute.

Chyle—Milk-like fluid absorbed during digestion.

Chyme—The pulpy mass of semi-digested food in the small intestines after its passage into the stomach.

Circulation—Movement of the blood in the vessels of the body.

Circulatory System — Pertaining to the process of circulation.

Clinical Thermometer—A self-registering thermometer for determining temperature of the body.

Coagulate—To form into a dense mass; to solidify.

Coalesce—To grow together.

Colon—That part of the large intestine which extends from the caecum to the rectum.

Comatose—In a coma; drowsy; sleepy.

Combustion—Act of burning.

Compress—To press or squeeze together.

Compressed Air—Air under pressure greater than that of the atmosphere.

Condiments—Seasoning used to give relish to food.

Congenital—Born with one; existing at birth.

Congestion—Overfulness of the capillary and other blood vessels.

Conjunctiva—The mucous membrane which lines the inner surface of the eyelid.

Constant—Not subject to change.

Constitutional—Belonging to, or adherent in, the constitution, or structure of body or mind.

Contagious—Communicable by contact; catching.

Contaminate—To soil, stain, or corrupt by contact.

Contractile—Having the power of contracting.

Contraction—Process of being diminished in size.

Convalesce—To recover health and strength.

Cornea—The transparent part of the coat of the eyeball which covers the iris and pupil.

Corpuscles—A minute or elementary particle; blood, lymph, pus corpuscles.

Corrosive—Eating away; having the power of wearing away.

Cortex—The outer part of an organ.

Costiveness—Constipation.

Cranial—Pertaining to the skull.

Cremation—Act of burning the dead.

Crypt—A simple gland, glandular cavity, or tube.

Crystalline—Resembling crystal; pure; transparent.

Cul-de-sac—An opening. A street or opening that has no outlet trench.

Cupping—The operation of drawing blood to or from the surface of the body.

Curative—Tending to cure.

Cutaneous—Pertaining to the skin.

Cuticle—Skin, pellicle or membrane.

Cyanotic—Affected with insufficient aeration of the blood.

Cyst—A pouch or sac without an opening.

D

Debility—State or quality of being weak.

Decomposition—Process of decaying.

Deformative—Tending to deform.

Degeneration—Condition of a tissue or an organ in which its vitality has become diminished.

Deleterious—Hurtful or destructive.

Delusion—An error or misleading of the mind.

Dementia—Insanity; a weakened intellectual state.

Deplete—To reduce, to lessen, to empty.

Depletion—Act of diminishing the quantity of fluid in the blood vessels by bloodletting.

Depression—Lowering of vital activity; a hollow or forsa.

Depuration—Purification; a cleansing process.

Derangement—Mental disorder; insanity.

Desquamation—To peel off in the form of scales.

Deterioration—Process of growing worse.

Devitalize—To deprive of vitality.

Diagnose—To recognize a disease by its symptoms.

Diaphragm—The muscular partition separating the cavity of the chest from that of the abdomen.

Dietetic—Pertaining to diet.

Digestion—Act or process of digesting.

Dilation—State of being expanded.

Disorder—Disturbance of the regular and natural functions of body. or mind.

Duct—A tube or vessel.

Dull—Slow of perception.

E

Edema—A swelling produced by effusion of watery fluid from the blood vessels through the capillary walls into the intercellular spaces of connective tissue.

Effete—Worn-out; no longer capable of producing young.

Efficacious—Effective.

Eliminative—Relating to, or carrying on, elimination.

Emaciate—Excessive loss of flesh.

Embolism—The obstruction of a blood vessel, usually by a clot of blood.

Embryo—In the first stages of development.

Emetic—Having the power to induce vomiting.

Emotion—Agitation, mental feeling.

Emission—Act of discharging.

Emphysma—Swelling produced by gas or air diffused in the cellular tissue.

Emunctory—Any organ or part of the body which serves to carry off waste.

Endemic—Confined to a certain limited area or region.

Endocardium—A thin, serous membrane lining the cavities of the heart.

Endometritis—Inflammation of the mucous membrane lining the uterus.

End-organ—An organ forming the terminus of a path of conduction for nervous excitations.

Enema—A rectal injection.

Epidemic—Spreading widely, or generally prevailing.

Epithelial—Pertaining to outermost skin.

Equalization—Act of equalizing.

Equilibrium—A state of balance.

Erosion—State of being destroyed by slow disintegration.

Eructation—Act of belching wind from the stomach.

Eruptive—Attended with eruption.

Esophagus—The gullet; the tube that leads from the pharynx to the stomach.

Etiology—The science of the causes of disease.

Euphemistic—Using a mild name for something disagreeable.

Eustachian Tube—The canal running from the throat to the ear.

Exacerbation—Increased severity of symptoms.

Excision—Act of cutting out or off.

Excretion—Elimination of waste products from the body of an organism.

Exhalation — That which is breathed out.

Expectorant—A remedy to promote discharges of mucus, etc., from the lungs and throat.

Expiration—Process of emitting air from the lungs through the nose or mouth.

Expulsion—Act of expelling.

External—Outward; exterior.

Extravasation—An effusion of fluid into the tissues; to force or let out of the proper vessels or arteries, as blood.

Exudate—To flow from a body through the pores.

F

Febrile—Pertaining to fever.

Feces—Discharge from the bowels.

Fermentation—A process of chemical change with effervescence.

Fetus—The young or embryo of an animal in the womb.

Fibrin—A white, insoluble, fibrous proteid.

Fibrous—Containing, consisting of, or like, fiber.

Filaria—A genus of slender, threadlike worm, parasitic in the blood and tissues of vertebrate.

Flaccid—Soft and weak; limber; lax; drooping.

Flatulence—The presence of gas in the digestive canal.

Flexibility—State or quality of bending easily.

Fluctuate—To move as a wave, to float backward and forward.

Follicle—A small secretory sac.

Fomentation—Application of hot cloths to reduce inflammation or allay pain.

Foreskin—The folds of skin which cover the glands of the penis.

Frenum—A connecting fold of membrane serving to support or restrain any part.

Function—The natural and proper action of any organ.

Furuncle—A boil.

G

Gastric—Pertaining to, or situated near the stomach.

Generative—Having the power of reproducing.

Gestation—Act of carrying young in the womb from cenception to delivery.

Gland—An organ for secreting a substance to be used in, or eliminated from the body.

Glottis—The opening from the pharynx into the larynx.

Glycogenic—Pertaining to the carbohydrate found in the liver.

Gnawing—A persistent pain in stomach or bowels.

Granules—One of the small red grainlike prominences which form on a raw surface.

Griping—Pinching and spasmodic pain in the bowels.

Groin—The depression marking the line between the lower part of the abdomen and thigh.

Gullet—The tube by which food passes from the pharynx to the stomach.

Gumma—A kind of soft tumor, of syphilitic origin.

H

Hallucinations—Perception of objects with no reality.

Hectic—Flushed, feverish.

Hemiphlegia—A palsy that affects one side of the body only.

Hemoglobin—The normal coloring matter of the red corpuscles of vertebrates.

Hemorrhage—Any discharge of blood from the blood vessels.

Homatropin—A drug which slows heart action.

Hydropathic—Pertaining to a water cure.

Hydrotherapeutic—A system of treating diseases by baths and mineral waters.

Hydrotherapy—A mode of treating diseases by copious and frequent use of water, internal and external.

Hygienic—Pertaining to health.

Hyperacidity—More than normally acid.

Hyperaemia—Excessive amount of blood in any part of the body.

Hypochondriac—Affected by morbid depression of mind and spirits.

I

Immersion—The plunging of a body into a liquid.

Immunity—State of resisting the development of a given disease.

Impairment—Injury.

Inarticulate—Dumb.

Inaugurate—To commence.

Inception—Act of beginning.

Incipient—Commencing.

Inebriate—Intoxicated; drunk; habitually given to drink.

Infection—Communication of a disease from one organism to another.

Inflammatory—Inflamed.

Inflammation—A morbid condition with excess of blood, pain, heat, swelling and disordered functions.

Ingestion—Act of taking into the stomach or digestive cavity, as food.

Inhalation—Act of breathing.

Inimical—Unfavorable.

Inspiration—Drawing of air into the lungs.

Intermittent—Coming and going at intervals.

Internal—Inside the body.

Intestinal—Pertaining to the intestines.

Intractable—Not easily governed.

Intubation—The introduction of a tube into a hollow organ to keep it open.

Intumescence—Anything swollen or enlarged, as a tumor.

Involuntary—Not under the control of the will.

Irritation—State of being excited to action by stimulation.

J

Juvenile—Youthful.

K

Keratitis—Inflammation of the cornea or horny covering of the eye.

L

Lachrymal—Pertaining to tears.

Lancinating—Piercing pains.

Laryngeal—Pertaining to the larynx.

Larynx—Upper part of the air passage between the brachea and the base of the tongue.

Lassitude—Weariness.

Lateral—Pertaining to the side.

Laxative — A mild purgative (cathartic — purgative medicine.)

Laxity—State of being lax.

Leaching—To wash, blood letting.

Leeching—Sucking blood with leeches, blood-sucking animals.

Lesion—Structural tissue change from injury or disease.

Leukocytes—White corpuscles.

Ligament—A band of fibrous tissue binding parts together, connecting the ends of bones.

Liquefaction—Act or process of making or becoming liquid.

Lumbar—Of, pertaining to, or near, the loins.

Lymph—A colorless alkaline fluid carried in the blood and lymphatic vessels.

M

Maceration—Steeping in fluid; softening.

Malady—Sickness, illness.

Malignant—Tending or threatening to produce death.

Malnutrition—Faulty nutrition.

Malodorous—Ill-smelling.

Mania—Madness.

Mastication—Reducing to pulp by chewing.

Matrix—The womb.

Maxillary—Pertaining to a jawbone.

Medicinal—Pertaining to medicine.

Medullary—Pertaining to the inner substance of an organ.

Menstruation—Periodical flow of blood from the uterus.

Mental—Pertaining to the mind.

Metabolic—Changeable in form.

Micro-organism—Any organism of microscopic size.

Mitigate—To grow mild.

Molecular—Pertaining to molecules.

Monomania—Derangement of mind on single subject only.

Morbid—Not healthful.

Morbific—Causing disease.

Moroseness—Sullen; ill-humored.

Mottled—Spotted.

Mutism—Condition, state, or habit of being without speech.

N

Narcotic—A drug which produces deadening of pain.

Nares—Nostrils.

Nasal—Pertaining to the nose.

Nauseant—Producing a desire to vomit.

Necrosis—Gangrene; death of cells surrounded by living tissue.

Neural—Pertaining to a nerve or the nervous system.

Nodule—A small, knotlike protuberance.

Normal—Ordinary or usual.

Nutriment—Anything which nourishes and promotes development or growth.

Nutritive—Nourishing; possessing the quality of affording nutrition.

O

Oasis—An isolated healthy tissue, surrounded by diseased tissue.

Obese—Fat.

Objective—Pertaining to an object of action or feeling.

Obstruction—That which obstructs, impedes or hinders.

Occlusion—Imperforation.

Ocular—Pertaining to the eye.

Opaque—Not transparent; obscure.

Organic—Pertaining to an organ.

Osseous—Composed of or resembling bone.

Ovulation—The formation of eggs in the ovary.

Oxidization—Act of combining with oxygen.

Oxygen—Air; most abundant of all the elements on the earth's surface.

P

Palliative—Alleviation, as of a disease.

Palpitation—A rapid pulsation.

Parturition—Childbirth.

Pathology—The science of treating disease.

Pelvis—The basin-like cavity of the lower part of the human trunk containing the rectum, urinary bladder and genital organs.

Percussion—The act of tapping the body to learn the condition of the parts beneath.

Perforation—The act of piercing; also, the opening in the wall of a cavity due to ulceration.

Pericardium—Serous membrane inclosing the heart.

Periosteum—The membrane of connective tissue closely investing all bones.

Peristaltic—Pertaining to wormlike motion of the intestines forcing their contents onwards.

Peritoneum—Transparent membrane lining the cavity of the abdomen.

Permeate—To pass through.

Pernicious—Injurious; destructive.

Persistent—Having staying qualities.

Pestilential—Producing a plague; noxious.

Pharyngeal—Pertaining to the pharynx, the membranous pouch back of the nasal cavities, mouth and larynx.

Pigment—Coloring matter.

Placenta—Organ of attachment of fetus to the uterus and by means of which it is nourished.

Plasma—The watery part of blood.

Plethora—Abnormal fullness of blood vessels.

Pleura—The serous membrane enveloping the lungs.

Pleural—Pertaining to the pleura.

Pneumo-gastric — Pertaining to the lungs and stomach.

Podgy—Fat and short.

Pollution—Uncleanliness; impurity.

Polypus—Tumor found on mucous membrane.

Precursor—Forerunner.

Predisposing—Giving a tendency to.

Pregnancy—State of being with child.

Premonitory — Giving previous warning.

Prepuce—Foreskin.

Pressure—Squeezing; compression.

Prevalent—Widespread.

Primary—First, underlying.

Procreative—Having power to beget.

Proliferation—Rapid production of new parts or offspring.

Propagation—Reproduction.

Prostate — Gland surrounding commencement of the urethra of male.

Prostrate—Stretched out; powerless.

Proteid—A general term for albumins and albuminoid constituents of the organism.

Protuberance—Knob-like projecting part.

Puerperal—Pertaining to childbirth.

Pulmonary—Pertaining to the lungs.

Pulse—Beat of the arteries caused by the pumping of the heart.

Purging—Cleansing; purging.

Purulent—Consisting of pus.

Pus—Matter produced by suppuration.

Pustules—Small, pimplelike elevations.

Putrefaction—Act of decaying; decomposition.

Putrid—Decayed.

R

Radical—Proceeding directly from a root; extreme; fundamental.

Recession—Withdrawal.

Rectum—The gate of the bowels.

Recumbent—Reclining; lying.

Recuperation—Recovery of health or strength.

Recurrent—Running or turning back of certain nerves.

Reflex—An involuntary movement due to nerve stimulus.

Regimen—A systematic course of diet; mode of living.

Renal—Pertaining to the kidneys.

Renovation—To restore to the former condition of freshness.

Resilience—Capability of a strained body to recover its size and shape.

Respiration—Act or process of breathing.

Restriction—Confinement within limits or bounds.

Retching—To vomit.

Retention—Act of retaining.

Retina—Sensitive membrane of the eye.

Retrogressive—Going backward.

Rigor—State of being rigid.

Rigor-mortis—Death stiffening.

S

Saccubated—Distended.

Sallow—Having a yellowish color.

Sanitary—Pertaining to health or preventing disease.

Scarifying—To make numerous small incisions or punctures.

Sclera—The white, tough outer membrane of the eye-ball.

Scrotum—The pouch containing the testicles.

Scurf—Dandruff.

Sebaceous—Pertaining to fat or suet.

Secondary—Following, succeeding to first.

Secretion—Fluid given out by glands and follicles.

Sedative—A soothing or tranquilizing agent.

Segment—A small piece cut from the surface of the body of anything.

Seminal—Pertaining to the semen.

Senility—The weakness and decrepitude characteristic of old age.

Sensory—Conveying sense of sensation.

Serous—Of the nature of serum.

Serum—The yellowish fluid separating from the blood after the coagulation of the fibrin.

Sigillation—Marked as if with a seal.

Spasmodic—Pertaining to a convulsion or spasm.

Specific—Of or pertaining to a species; definite.

Spermatic Cord—The cord which suspends the testicles in the scrotum.

Sphincter—A muscle serving to contract or close an orifice.

Spinous—Having the form of a spine or a thorn.

Sporadic—Occurring singly, or apart from other things of the same kind.

Sputum—That which is expectorated; spittle; saliva.

Stagnating—Lack of action; state of being dull.

Sternomastoid muscle—The large muscle of the side of the neck that depresses and rotates head.

Stertorous—Snoring.

Stomatitis—Inflammation of the mouth.

Strident—Harsh sounding; shrill.

Stringent—Binding or drawing tight.

Structural—Of or pertaining to organic structure.

Stupor—Suppression of sense or feeling.

Subjective—Internal; pertaining to one's self.

Substances—That which is real; the main parts.

Suffocation—State of being choked.

Sumik—Whole milk artificially soured, then beaten to break up the curd.

Supplementary—Additional.

Suppressed—Overpowered; oppressed.

Suppuration—Matter produced by suppuration; pus.

Supra-renal—Situated above the kidneys.

Susceptibility—Capability of receiving impressions.

Suspensory—Bandage or bag for supporting the scrotum.

Symptom—That which indicates the existence of a certain disease or condition.

Symptomatic—Pertaining to the nature of a symptom.

Symptomatology—That part of medical science treating of symptoms of disease.

Synovial—A transparent lubricating fluid.

T

Tegumentary—Serving as a gland.

Temperature—The degree of intensity of heat.

Tendon—One of the strong bands or cords of connective tissue forming the terminations or connection of the fleshy portion of a muscle.

Tenesmic—Of or pertaining to tenesmus; the desire to urinate or move the bowels without being able.

Tension—Act of straining, stretching or tensing.

Testicles—Two male genital glandular bodies in the scrotum which secrete semen.

Tetanic—Pertaining to tetanus.

Thoracic—Of or pertaining to the thorax.

Thready—A scarcely perceptible rapid pulse occurring in shock and shortly before death.

Throbbing—Vibrating, palpitating.

Torpidity—Sluggishness.

Torso—Trunk of a human body.

Toxemia—A poisoned state of the blood.

Toxic—Pertaining to or caused by poison.

Tremor—A quivering or vibrating motion.

Tubercles—A small, rounded, morbid growth somewhat larger than a papule, in the substance of an organ or in the skin.

Turbid—Disturbed confused, disordered.

U

Ulcer—Anything that festers and corrupts like an open sore.

Ulcerate—To make sore.

Undulating—To move backward and forward, or up and down.

Urates—A salt of uric acid.

Ureter—The duct which carries away the urine from the kidney to the bladder.

Urethra—The canal that carries off urine from the bladder; also serving as genital duct in man.

Uvula—The pendent fleshy lobe in the middle of the posterior border of the soft palate.

V

Vagina—Canal which leads from the uterus to the external orifice of the genital canal.

Varicosity—State of having irregularly swollen or enlarged veins.

Vascular—Pertaining to a vessel for conveying a fluid.

Vein—A blood channel conducting blood toward the lungs for purification.

Venous—Pertaining to a vein or veins.

Ventilation—Removal of impurities collecting in the air of inhabited rooms.

Ventricle—A cavity of an organ.

Vermiform—Resembling a worm.

Vertebra—A bony segment of the spinal column.

Vertigo—Dizziness.

Vesicle—A small and more or less circular elevation of the cuticle containing a clear fluid.

Vesicular—Pertaining to the air cells of the lungs.

Viability—Ability to live.

Vigor—Strength.

Virus—The poison or contagium of an infectious disease.

Virulent—Extremely poisonous, deadly.

Visceral—Pertaining to the internal organs.

Viscid—Sticky.

Volition—To will; to be willing.

Vomiting—To eject from the stomach through the mouth.

Vulva—The external parts of the female genital organs.

W

Wen—A fatty tumor.

Womb—Organ of gestation.

Z

Zymotic—Pertaining to fermentative changes produced by an organized ferment.

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